

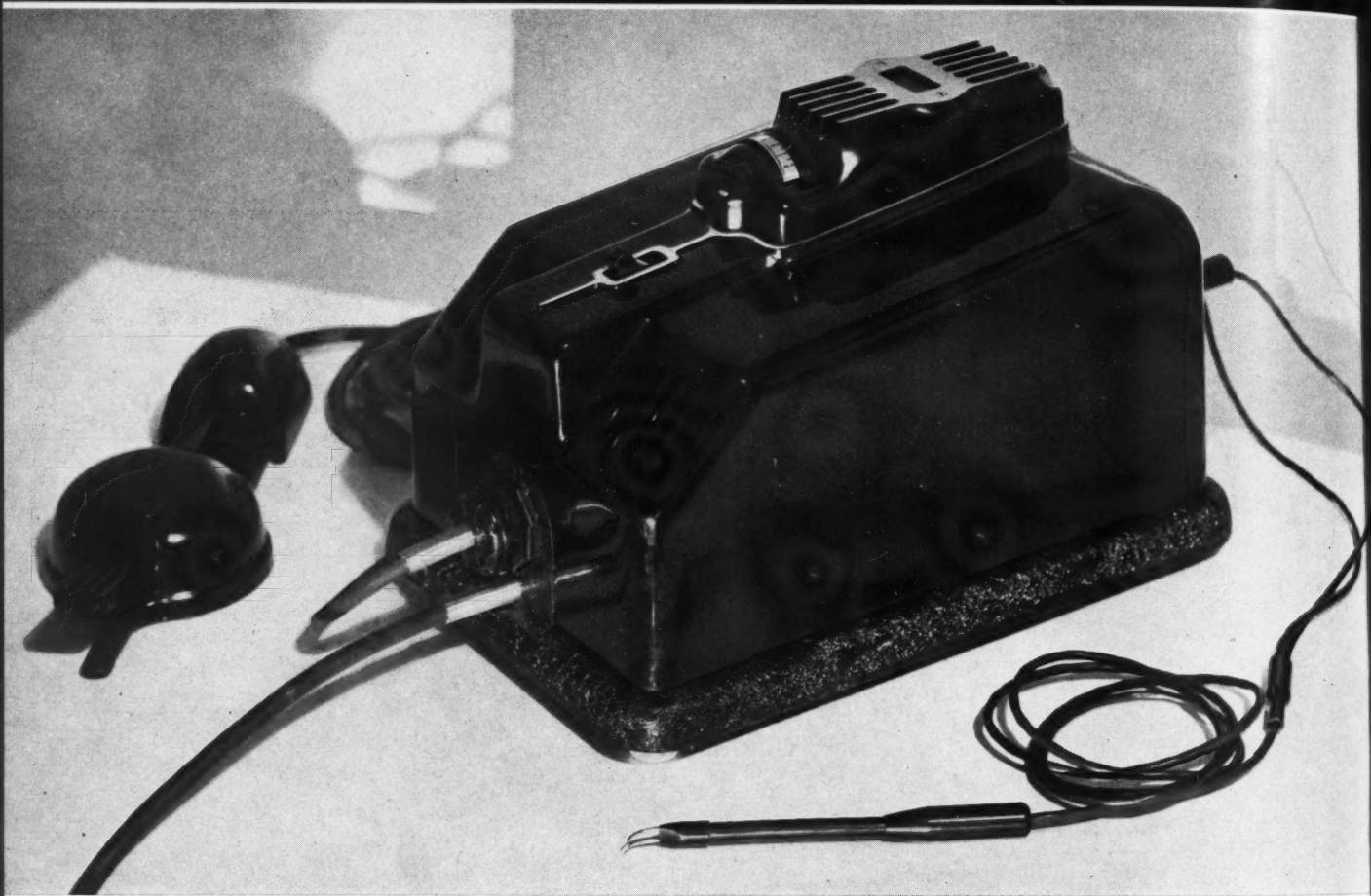
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# *The* **DENTAL DIGEST**



JUNE, 1936  
Vol. 42 No. 6

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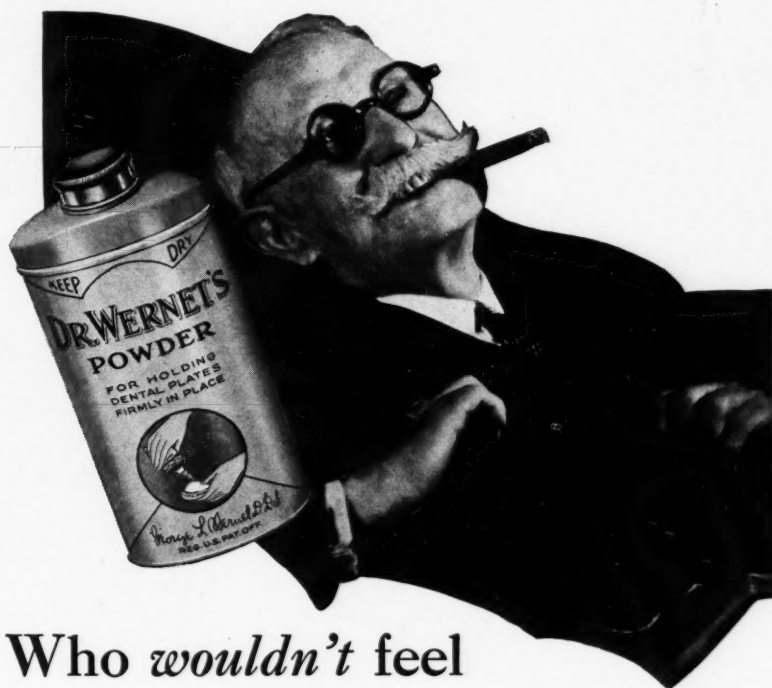


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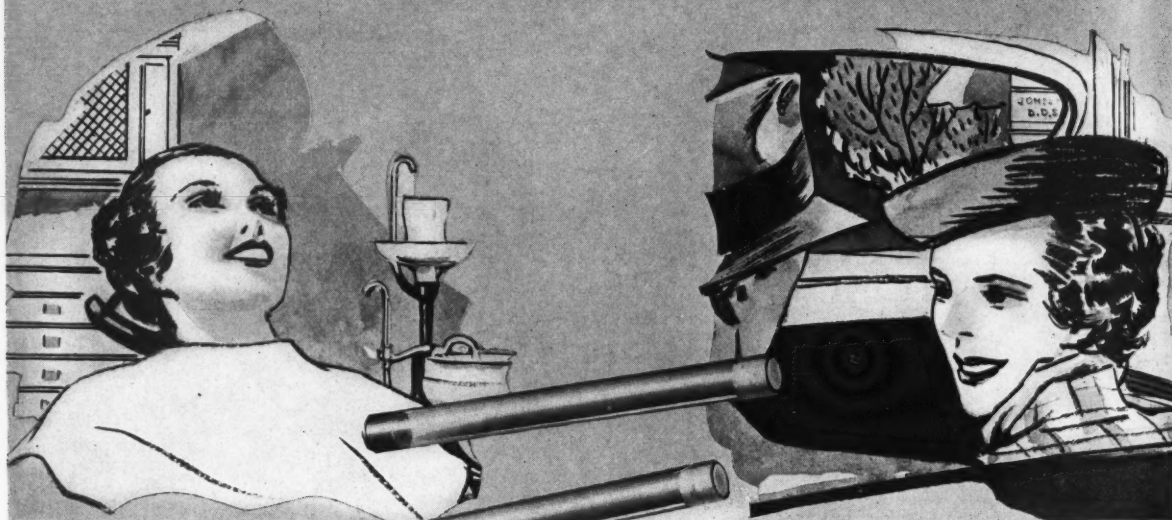
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# THE MODIFIED JACKET CROWN

IRVING E. LABY, D.D.S.

Chicago

THE technique to be described here is intended for use in regulating mal-aligned teeth in adults in cases of esthetic necessity. I do not wish to be misconstrued as advocating a modified restoration as routine practice, but hope it will be definitely understood that it has its place in dentistry only when indicated. Children who can have their teeth regulated with orthodontic appliances should be definitely excluded from this form of restoration. The demand for this type of dentistry would naturally be by actors, models, public speakers, and others to whom appearance is of utmost importance.

I have often been told by dentists that they do not advocate the jacket restoration in their practices because they find that the pulp in many cases becomes devitalized. Another fault they often find is that the gum tissue around the neck of the jacketed tooth becomes congested. Pulp involvement in these cases is probably due to one of the following factors: (1) A previously deep-seated silicate restoration might have affected the pulp; when the tooth was being prepared for the jacket under a local anesthetic, the dentist may not have been aware of the condition of the pulp. The vitality of a tooth should always be tested and ascertained before an anesthetic is used. (2) The use of a porcelain filling cement in placing a jacket crown is another cause of pulpless teeth. (3) Many pulps are injured during the preparation through excessive heat from the stones and burs. (4) Pulps may be devitalized by the change of position; that is, traumatic occlusion.

The "blue line" or the congested area around the neck of a tooth may be caused by a faulty jacket which may be overlapping or jagged, or by a poor seam. I would prefer to have a jacket extend only half way onto the shoulder than beyond the shoulder, for soft tissue will creep up against a smooth surface, whereas it will recede from an overhanging ledge. A jacket should never have a jagged featheredge to the tissues, but should be smooth, glazed, and rounded.

## PRE-TREATMENT RECORDS

It is important in this type of den-

tistry to have definite and complete records. The patient should be told what treatment is to be instituted. The patient's will and cooperation are essential.

1. A photograph should be taken with the patient smiling, both before and after the restoration is completed. The purpose of this is chiefly to show the patient the comparison.

2. Study models should be made, both for study and record-keeping. A piece of compound is placed between the anterior teeth and the patient is told to close. The compound is pressed against the teeth with the fingers, allowed to chill, and then carefully removed so as not to distort. This is for record-keeping. An impression is then taken of the upper and lower teeth, and models are run up and articulated for study.

3. Full mouth roentgenograms should be taken.

## TECHNIQUE

Fig. 1, A represents a case of extreme irregularity. The dotted line represents the objective in correction. Fig. 1, B shows the mal-alinement from the labial aspect.

1. The foremost tooth is the left central. That tooth is therefore first prepared for a jacket crown in the conventional manner, and the crown is cemented to place (Fig. 3).

2. The right central (Fig. 2) is next prepared. The difference in the preparation here is that the shoulder extends around the mesial, lingual, and distal aspects, but there is no shoulder on the labial. It will be noted (Fig. 1, B) that the gum line on the central is not even with the other central, but extends down onto the crown. In preparing this tooth, therefore, it should be prepared beneath the gum line, so that the seam of the finished crown will extend even with the other central. The modified jacket will have to be constructed with a bulk of porcelain on the labial aspect (Fig. 3). This will bring the crown into line, and the bulk will be butted into the gum tissue. Whenever a bulk of porcelain is to be butted into the gum tissue that area of porcelain should be smooth, round, and glazed; therefore, this tooth preparation

should not have a shoulder at the labial.

3. When the tooth has been cemented in place, the operator is ready to proceed with the laterals, which happen to be similar in this case. These are prepared without a shoulder on the labial surface. The right lateral, however, is prepared farther beneath the gums than the left. In observing the depth of the preparation beneath the gums, it will be found that after the work is finished the gum line will seek a level and will correct the gingival line along with the line of teeth, as seen in Fig. 6, B. Note irregular line of gum margin, Fig. 1, B.

4. The cuspids are almost in the desired alinement, except that the tip of the right cuspid (Fig. 1, B) should be ground the least bit. This can be done without injury to the tooth, provided the tooth is highly smooth and polished.

5. The left first bicuspid (Fig. 4) and the left second bicuspid (Fig. 5) are next prepared. In preparing the modified jacket for the second bicuspid, there will be a large amount of porcelain on the buccal of the jacket. This is butted into the gums and brings the tooth into line and into useful occlusion. Note that this bulk of porcelain is almost the width of the tooth itself.

6. The approximal areas need not have rounded contact points, but the jackets should be prepared so that they are stress breaking to one another. Porcelain will be adjacent to

Fig. 1—A, Case of extreme irregularity. Dotted line shows objective in correction. B, Irregularity seen from labial.

Fig. 2—Right central prepared with shoulder around mesial, lingual, and dental aspects, but not around labial.

Fig. 3—Modified jacket prepared with bulk of porcelain on labial.

Fig. 4—Left first bicuspid.

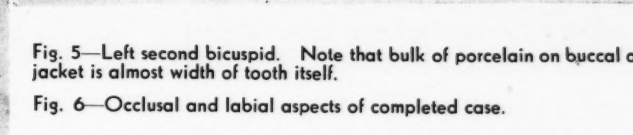
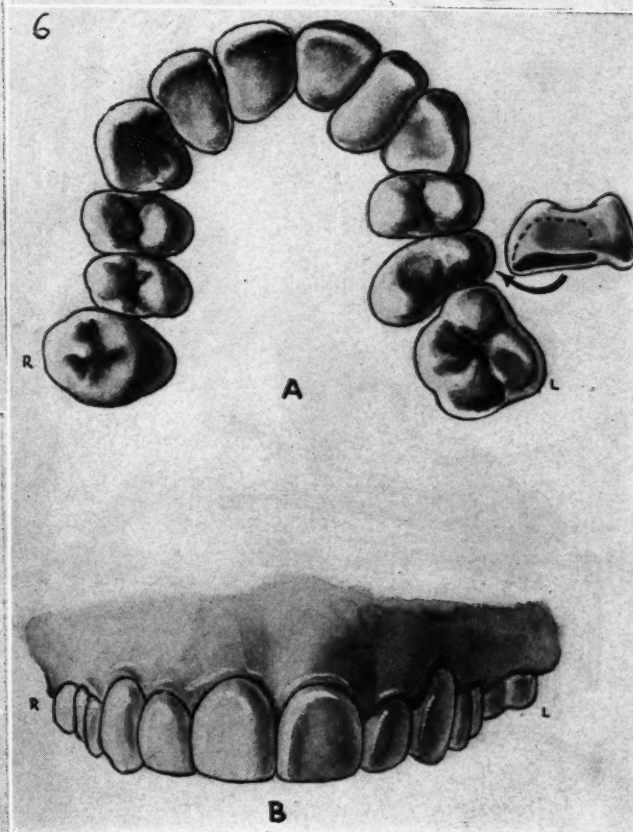
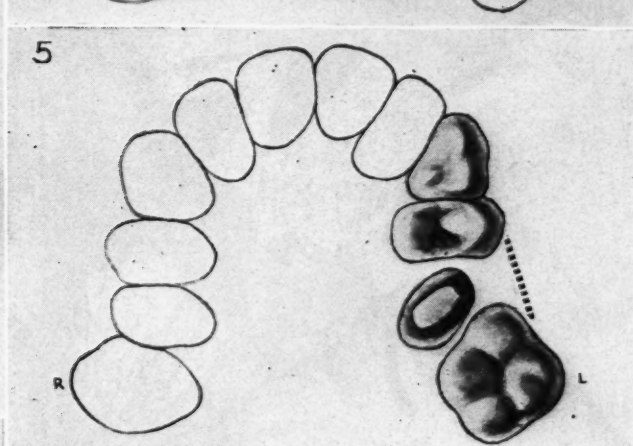
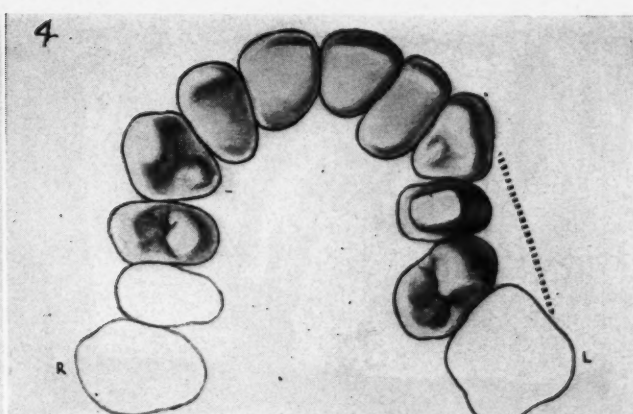
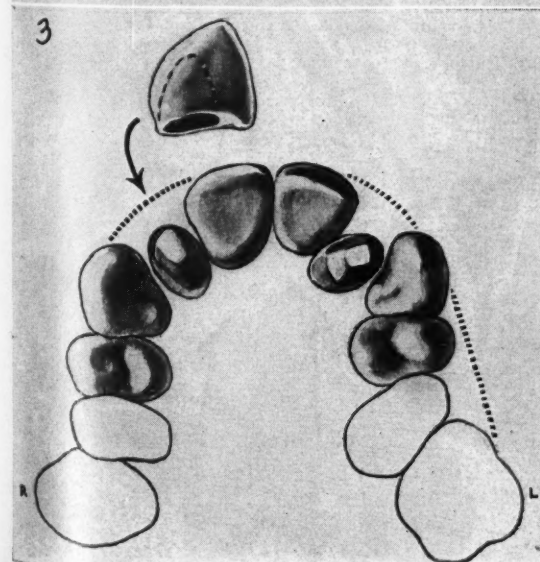
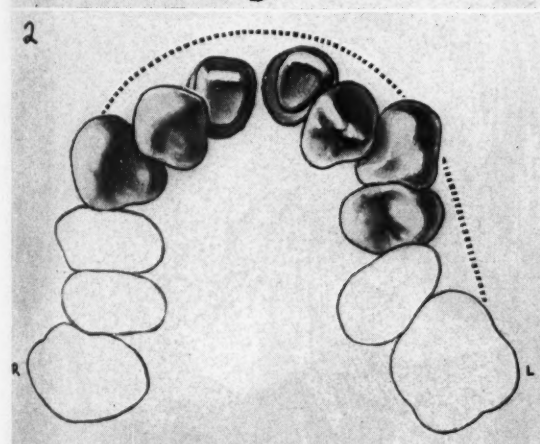
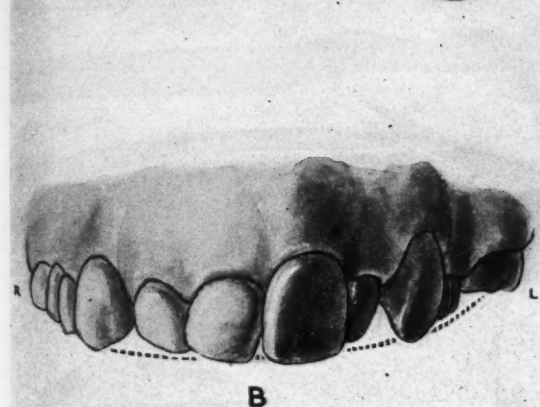
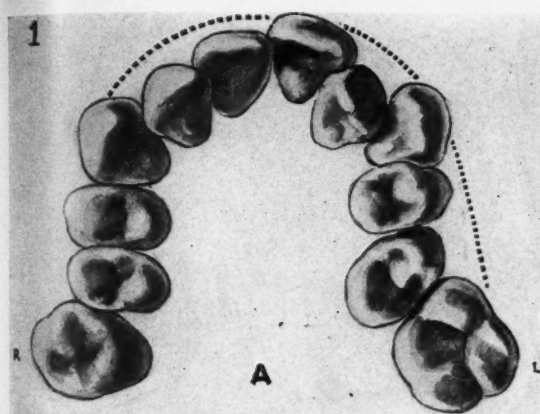


Fig. 5—Left second bicuspid. Note that bulk of porcelain on buccal of jacket is almost width of tooth itself.

Fig. 6—Occlusal and labial aspects of completed case.

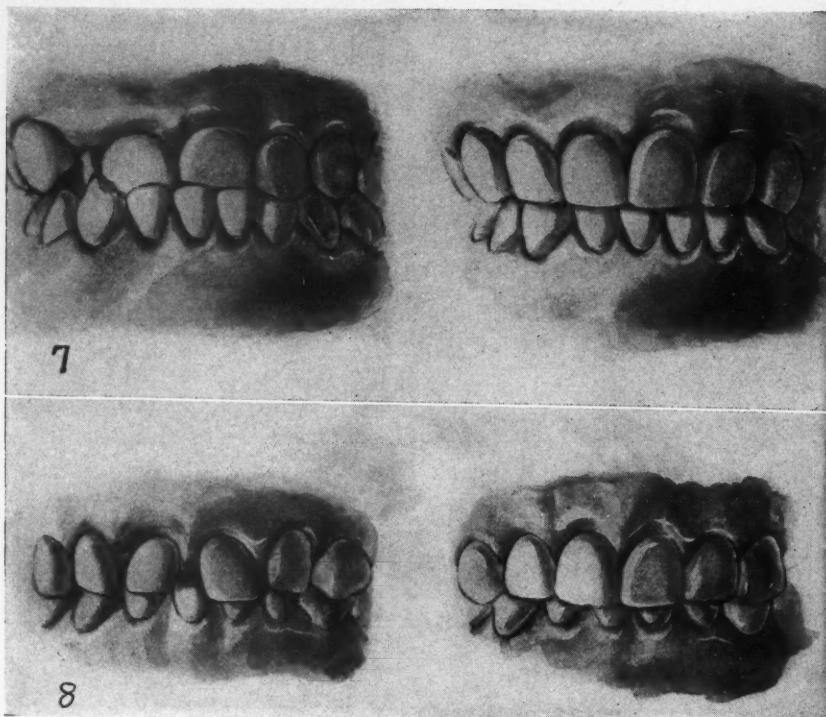


Fig. 7—Case of malocclusion treated with modified porcelain jacket crown.

Fig. 8—Case of frenal separation treated with modified porcelain jacket crown.

Figs. 9 and 10—Appearance before and after treatment of two patients.



porcelain in these extensive cases, so that the operator need not be concerned with the rounding of contact points to prevent decay.

7. If further strength is desired in these modified jackets, the jackets can be the platinum reinforced type. If, however, the occlusion is watched throughout, breakage will rarely occur.

8. Fig. 6 shows a condition in which it was necessary to allow for the bite. The laterals, therefore, have a groove extending across the mesio-distal on the occluding surface. When this is necessary the lateral may look like a bicuspid if viewed from the occlusal surface. Inasmuch as this is in the upper arch, and neither the tongue space nor the lingual environment has been altered, this is of no material difference.

9. In most of these cases of irregularity, it is seldom necessary to change  
(Continued on Page 190)



## OSTEOMYELITIS: REPORT OF A CASE

DOUGLAS H. IRWIN, D.D.S.

Kansas City, Missouri

**I**N THE following case report of an osteomyelitis a mold fungus was responsible for the infection:

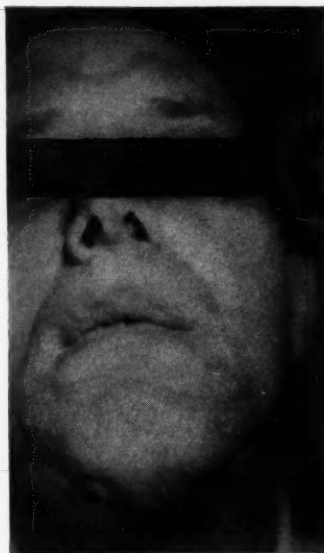
*Examination*—The patient, a man, aged 40, had lost 30 pounds during two weeks' illness preceding examination. The pulse rate was 100; he was distressingly weak and the clinical picture was one of toxicity. There was no elevation of temperature.

There was a rather large swelling on the buccal aspect of the left mandible in the area of the mental foramen. Some fluctuation could be felt. The picture was that of a low grade periostitis of long standing which had failed somehow to point to the surface. The absence of temperature could not be accounted for at this time.

*History*—Four weeks previously the lower right first molar had been extracted without difficulty; the socket had healed normally. Two weeks following the extraction the right side of the mandible became swollen and painful. The swelling was hard and discrete; the line of demarcation was distinct. The application of hot packs resulted not in a breaking down of the soft tissues but in a slow migration of the swelling around the buccal surface of the mandible from right to left until at the end of the second week after the onset it had reached a point opposite the left bicuspid.

A roentgenogram revealed an area of bony destruction directly in the median line which was the size of a nickle; the edges were irregular and roughened. No sequestrums were present; liquefaction rather than sequestration occurred.

*Pathologist's Report*—"The smears were made directly from the freshly made incision, and later the exudate in the rubber drainage tube showed many short segments of a strongly gram-positive mold fungus which grew promptly and vigorously on glucose agar. The colonies were snow white



Drains in place in incision.

and adherent to the medium, later creeping up on the sides of the tube in a fine fell of mycelia. No spores were formed during the time of observation. No druses were formed nor were there any pigment formers.

"It is my impression that this is some unusual species of streptothrix not generally pathogenic. For this reason I believe the prognosis is favorable for complete recovery.

"Drainage and potassium iodide should accomplish a cure."

*Treatment*—Since a point of fluctuation or softening could be felt within the muco-buccal fold, it was thought that drainage could be established by opening into the mass within the mouth to prevent facial scarring. Under nitrous oxide oxygen, the mass was incised freely down to the bone, but with the most thorough exploration no free pus could be found. This failure to encounter pus was a surprise.

No improvement followed this procedure, and it was apparent that ex-

ternal drainage had to be instituted. Accordingly the patient was again anesthetized and the soft tissue on both sides of the chin was incised and tunneled through so as to permit the passing of a rubber drain completely through until it was in contact with the bone. A small amount of necrotic bone and some spicules were curetted from the area in the median line to be cultured. The buccal surface of the mandible from the right first molar to the left first molar had been denuded of periosteum so long that the bone felt roughened and dead as a sequestrum would feel, and it was feared that the greater part of the anterior portion of the mandible would be lost. After drainage was established, however, and adequate treatment was instituted the periosteum did become reattached and no sequestration occurred.

Massive doses of the iodides were given by mouth together with subcutaneous foreign proteins and intravenous salicylates. The salicylates and protein were given on alternating days. Although the condition of the blood may be satisfactory in cases of chronic bone infection, the use of a foreign protein invariably produces a marked clinical improvement.

Locally a weak cresol solution was used for irrigation, followed by 10 per cent mercurchrome.

At the end of the third week the tube was removed, and by the end of the fourth, all drainage had ceased and treatment was discontinued.

### COMMENT

I have been unable to find in the literature a case of true bone infection of a mold fungus, and it is apparently unusual. Cultures made from time to time during the entire course of treatment failed to produce any other bacteria but a profuse growth of the mold was always obtained.

# ROENTGENOGRAPHIC OBSERVATION OF PERIODONTAL CALCIFIC REACTION

C. L. MEISTROFF, D.D.S.

New York

**R**OENTGENOGRAPHIC evidence is not for microscopic reference. Histologic changes are neither visible nor available for roentgenographic visualization. Changes of sufficient density to give a gross volume on a film for roentgenologic interpretation can be diagnosed only as absent or present. It is impossible to classify the type of pathologic condition as to bacterial origin; it is impossible to view the pulp or its structure; to distinguish the fluid contents of a cyst as (1) sterile, (2) purulent, (3) sanguinous, (4) serous, or (5) mixed; or to designate the contents of an apical infection.

The roentgenographic examination does not disclose abscesses, granulomas or cysts, or any other definite type of pathologic disorder except that a relative tissue density other than normal exists—a difference in illumination value that is recognizable as being pathognomonic of the conditions in the area examined. In this paper only pathologic entities are discussed.

Unfortunately in roentgenographic examinations clinical signs and microscopic observations are often read into a roentgenogram instead of interpreting roentgenographic conditions as they really are. The roentgenogram should not be viewed as if it were the patient. Interpretation ends with the proper reading of the roentgenographic material as presented; further attempts at shadow interpretation entail guesswork which is dangerous to a true diagnosis because it means reading clinical signs into the roentgenograms and making attempts at microscopy.

Calcific reaction phenomena are seen in three distinct types on the roentgenogram:

1. Complete destruction:
  - a. Large areas of apical necrosis (Figs. 1, 2, 3, and 4).
  - b. Apical areas proceeding on to cystic formation (Figs. 1 and 2).
  - c. Periodontal structures destroyed owing to periodontoclasia (Fig. 5).
2. Tissue deposition:
  - a. Hypercementosis, traumatic (Figs. 6 and 7).

- b. Hypercementosis, infectious (Fig. 8).
- c. Calcific delimitation of cysts and apical areas (Figs. 2 and 9).
- d. Thickening of the lamina dura (Fig. 5).
- e. Thickening of the trabeculae converging on the lamina dura (Fig. 5).

3. Tissue removal: Cystic expansion once the peripheral delimitation has been established (Figs. 9 and 10).

Fibrous reactions are not visible. The granulation tissue composition of a granuloma, the fibrous sacculations of an abscess or its contents are not visible. The fact that there is disease present is made visible by contrast through bone destruction in the area involved. Fine differentiation between granulomas and abscesses are made by some authorities. This is impossible since fibrous tissue and the fluid reactions have the same illumination value on the dental film. Post-operative inspection gives us information as to the nature of the contents.

In the fibrous reaction there is a sacculations of the infection through the formation of a highly vascular fibrous tissue reticulum which enmeshes the infection in its interstices. Since there is so close and intimate a contact between circulation and infection, it is easy to understand the facility of toxic absorption initiated by the infection in this first stage of focal infection.

An abscess is primarily a cavity filled with pus. A granuloma is a local reaction to a chronic infectious irritation; the ultimate result is a granulation tissue tumor. The argument, therefore, that a central area of liquefaction necrosis can be seen as a granuloma is without support. An apical area appears as a dark site with or without a definite calcific periphery. In many cases a slightly rarefied field may be seen instead. If the fluid reaction is present centrally and exhibits the same illumination value as the fibrous tissue, how can it be seen? The fact that the superimposed reticulations of the cancellous structure overshadow the area of bone destruction adds to the difficulty of

interpretation. When apical areas were inspected after extraction these sites were found to be areas of complete or softened bone destruction, easily removable by curettage; or granulomas, or a well-limited and hardened layer of bone lining the diseased site.

An exposure of good detail and contrast would always show a large necrotic area with many small areas within it of complete destruction. This was not seen in the cystic type or an area that was well defined and limited. Acute cases presented no roentgenologic evidence except a barely visible break in the lamina dura. On extraction a few drops of a purulent material could be obtained.

Hypercementosis is a natural reaction of the cementoblasts to irritation. This irritation may be either pathologic or physiologic in character. The etiology of the pathologic type is in infection, and the physiologic, through the response to stimuli over long periods of time to masticatory stress or malocclusion.

The inference is made from time to time that exostosis and hypercementosis are identical. This is untrue. The cementum is laid down on the root by the cementoblasts of the periodontium and not by the osteoblasts of the lamina dura. Roentgenographic evidence points to the fact that hypercementosis is first and always viewed on the root and not as beginning on the alveolar lining.

In the infective type of stimulation the periphery of the new deposit is usually hazy, not clean in outline or contour, and surrounded at the apex by a rarefied area.

In the physiologic type of stimulation the cementum can be seen as a dense layer on the root, the outline of which is clear, well-defined, and sharp in contour. The periodontal space is usually narrowed, the lamina dura is thinned; sometimes it is seen pushed into the cancellous structure and at some points may show a fusion with the cementum.

In the event of apical infection there are two distinct roentgenographic pictures seen. In one there is

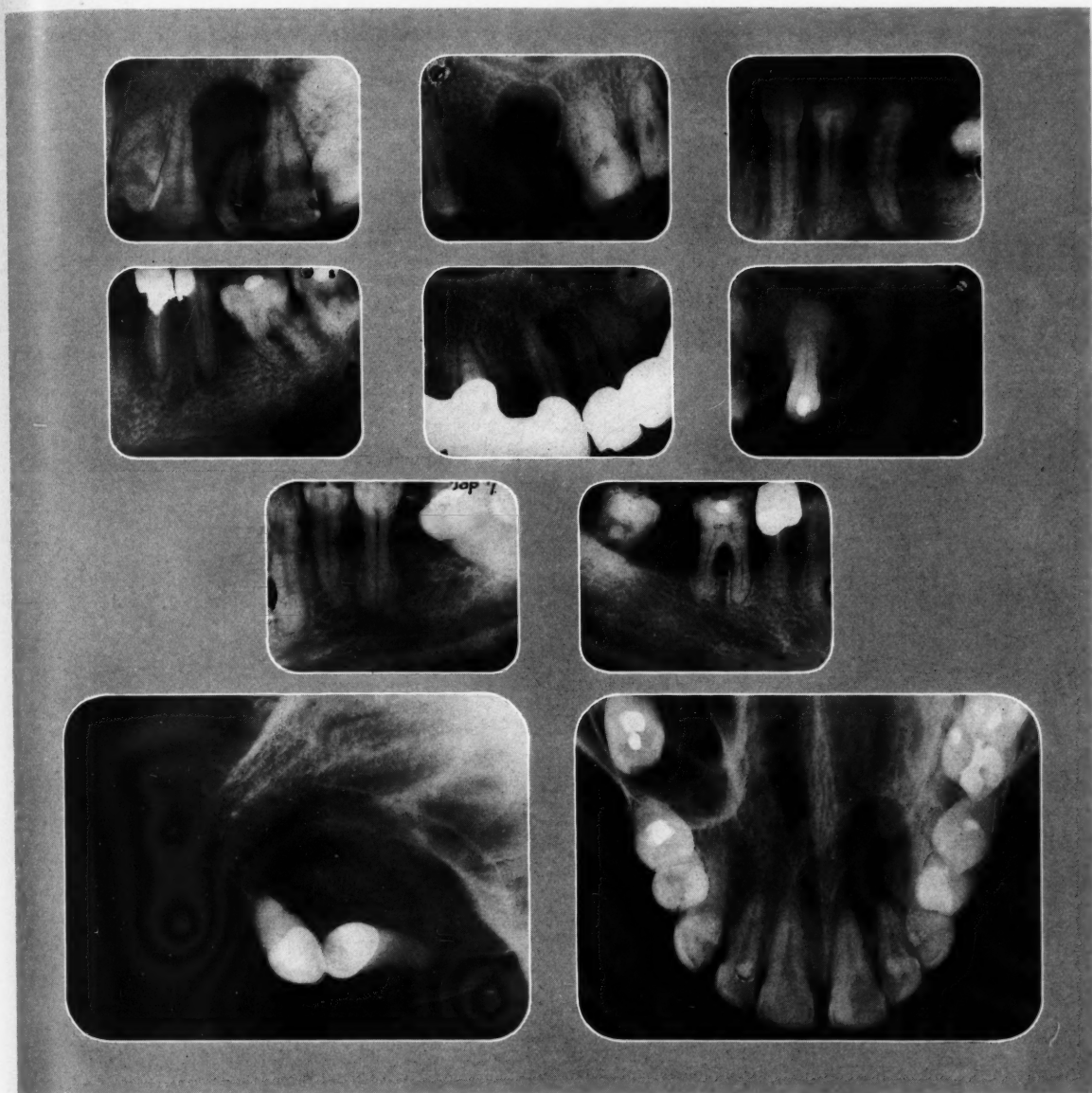


Fig. 1—Large necrotic area. Multiple or smaller similar areas are seen in this one large rarefied spot. No roentgenographic evidence of cystic changes yet. No visible peripheral delimitation.

Fig. 2—Large necrotic area undergoing cystic changes. Note the well-defined limitation. This also may be interpreted as an example of good resistance to a low-grade infection. The involvement here is chronic.

Fig. 3—This is the diffuse type of infection. Note the absence of calcific deposition, the areas of destruction in the surrounding bone. This type is also chronic in nature.

Fig. 4—In the first bicuspid note the dense calcific deposition at the apex. At the apex of the second bicuspid note that the reaction is somewhat different and that a wide circle is hemming in the spread of the infection. Note the apical erosion in both cases.

Fig. 5—Note here the thickening of the lamina dura, the increase of the dimension of the trabeculae, the haziness and widening of the periodontal space and the dullness of the root outline. Note the radiating effect of the trabeculae. They are more dense in the immediate vicinity of the lamina dura and thin out as the internal bone structure is reached.

Fig. 6—This is, of course, an exaggerated extreme but note the clarity of the deposit and the sharpness of its outline. This is purely traumatic in origin.

Fig. 7—Note the deposits on the bicuspid roots. See how clear the outline is; note that the periodontal structures are intact. Note also the difference in density between cementum and root dentine. This type is also traumatic in origin.

Fig. 8—Note here the outline of the distal root deposit and compare it to the mesial root cementum. Note the apical etching in the former. This is infectious in nature.

Fig. 9—This is a roentgenographic picture of what might safely be called a cyst. Note the white calcific outline, the clarity of the contents, and the extent of its dimensions. This particular cyst is follicular in origin.

Fig. 10—Note here also the clarity of the contents, the sharp demarcation between infection and normal bone. It is not as clear with a definite calcific delimitation but its cystic characteristics are well established. This one is infectious in origin.



a definite calcific delimitation surrounding the area. This is indicative of good resistance on the part of the patient in walling-in the infection; or it may be taken to mean a low grade infection in the beginning which could be so treated. In the other picture there is no walling-in, no calcific delimitation: the infection seems to be diffuse in nature and the bodily resources cannot properly cope with its invasion. Careful inspection of these cases will almost always show many small or multiple areas of necrosis pigeon-holed within this one large site. The smaller areas are those places wherein complete destruction has taken place; whereas those places limited in outline by the calcification may also present the same contents. Not every dark area or involved apex is a cyst. The well-advanced cyst will be seen to have a definite calcific outline and uniform density. Even this

sign must not be relied on too much. Postoperative inspection reveals the true nature of the condition. It may be anything from a simple abscess to a cyst bordering on pathologic fracture.

The diffuse type of infection is usually the etiologic factor in the sudden acute flare-up that leads to osteomyelitis or Ludwig's angina. The walled-in variety may also lead to this climax if fistula formation takes place and proper care is not had. In the event of a cyst that has undergone pathologic fracture, entrance of debris may lead to the same state of affairs.

#### SUMMARY AND CONCLUSION

1. Roentgenographic evidence of diseased areas is limited to the indication of the presence or absence of pathologic conditions. Definite conditions unless they are *well-advanced*

and thus discernible in themselves, are not indicated.

2. It should be realized that the many stages of disease are not final but change and overlap; therefore, sufficient leeway in interpretation must be given.

3. Patients' clinical symptoms cannot be found in roentgenograms.

4. Roentgenologic diagnosis is useful only if correctly interpreted.

5. Roentgenographic evidence should be sought objectively; it should not be molded to a preconceived dictum.

6. The only roentgenographic evidence visible on a roentgenogram is calcific and cemental deposition, and bone destruction. In other words, only calcific changes are actually seen on the dental roentgenogram.

7. Fibrous reaction or fluids of any sort cannot be seen on the dental roentgenogram.

40-39 102 Street  
Corona, Long Island

## THE MODIFIED JACKET CROWN

(Continued from page 186)

the alinement of the lowers for esthetics, because the lower lip often covers such teeth. Should it be necessary to jacket any of the lower teeth because of occlusion, the procedure is similar.

10. Often the incisal edge of the lower occluding tooth requires a little grinding but jacketing is not necessary. I have, however, corrected cases in which the lower anteriors were jacketed as well as the uppers, to bring about the desired results.

11. Fig. 7 shows a case in which the centrals were both prepared for modified jackets. The jackets were constructed with a bulk of porcelain on the labial and the preparation was extended beneath the gum tissue so as to raise the gum line. Finished crowns were made, so that the incisal edges were in line with the left lateral. When these modified jackets were

cemented in place, instead of occluding back of the lowers, they were brought over the lowers. The right lateral was prepared as the lateral in the previous case. The right cuspid was also prepared for a jacket crown and a conventional jacket was placed to bring the tooth into line.

12. Fig. 8 shows a frenal separation. If the two centrals had been jacketed, they would have looked wide and unsightly. It was therefore necessary to consider the case from cuspid to cuspid. The central was prepared according to the conventional method, but no shoulder was provided on the mesial, and the preparation was exaggerated on the distal. The jacket was prepared with the bulk of the porcelain on the mesial, rounded and smoothed at the gingival, and the crown was made as thin as possible on the distal. The other cen-

tral was prepared in the same way. The space was thus shifted to the distal of these centrals; therefore, the technique for the laterals is similar to that of the centrals. The space was then shifted to the distal of the laterals. The cuspids were similarly prepared.

#### COMMENT

If it is accepted in everyday practice as good dentistry to make a bridge in which the porcelain pontic is extended laterally and butted into the gums, then the modified jacket may be considered as a bridge that is extended labially or buccally. When porcelain is glazed the tissues react agreeably to it, and underneath the bulk of porcelain there will be no resorption or irritation.

# RESTORATION OF THE LOWER BICUSPID

D. HOYT SIMPSON, D.D.S.

Atlanta, Georgia

THE buccal and occlusal surfaces of most lower bicuspid are conspicuous; the anatomy does not lend itself readily to attaching bridges, and the tooth is not strong.

The lower first bicuspid usually has a short round root; the second bicuspid sometimes has two roots. They are not as long nor as strong as the cuspid root. Most of these teeth have a small neck with a bell-shaped crown. The buccal cusp predominates (especially in the first bicuspid). The crest of the cusp is usually in line with the central long axis of the tooth. The lingual cusp is weak and inferior, offering little resistance for retention.

The abutment for a bridge to restore the missing lower bicuspid must be designed with consideration of (1) esthetics, (2) strength, (3) economy of tooth structure, and (4) resistance to stress (Fig. 1).

There are satisfactory preparations for the upper anterior teeth but these are not so well adapted to the lower bicuspid. A knowledge of the thickness of the enamel, the direction of the rods, and the susceptible areas is necessary in designing a preparation; it is necessary to know where to bevel and where to extend for prevention. The size and position of the pulp must also be considered.

## TYPES OF RESTORATIONS

*Slice Type Distal Inlay*—If the bicuspid is sound or slightly decayed on the distal contact the slice type distal inlay may be used. This preparation is not difficult to prepare, and offers sufficient resistance to lateral, vertical, and rotational stresses. It is unnoticeable in the mouth and conserves valuable tooth structure (Fig. 2).

*Contact Cup Abutment*—1. The "contact cup" abutment is first started by a slice with a carborundum disc, the occlusal margin being brought to the crest of the marginal ridge.

2. The occlusal margin is then beveled.

3. Next a triangular box is prepared on the distal as nearly at right angles to the slice as possible. This box resists lateral, vertical, and rotational stresses.

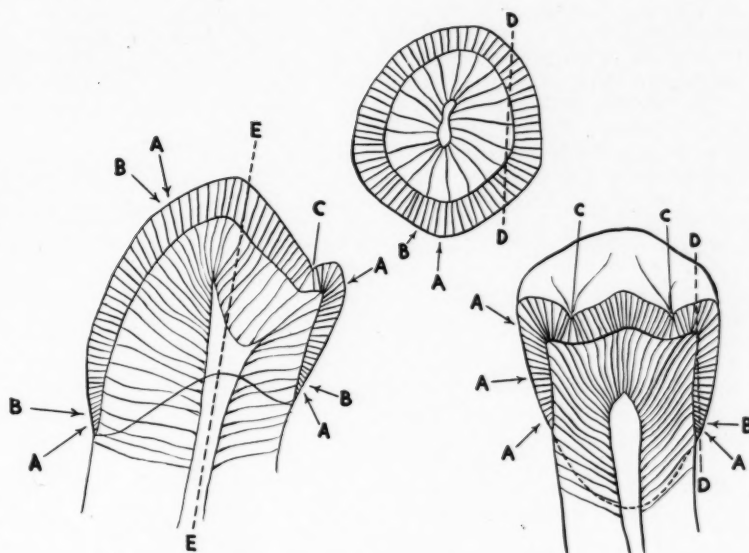


Fig. 1—Anatomy: A, Direction of the enamel rods, inclining toward cervical and cusps. Minimum angle for beveling margin. B, Improper angle for margin. C, Direction of the rods in pits and fissures. Explains spread of caries here. D-D, Manner in which a slice cuts across rods leaving none unsupported. E-E, Long axis showing point of buccal cusp near central long axis.

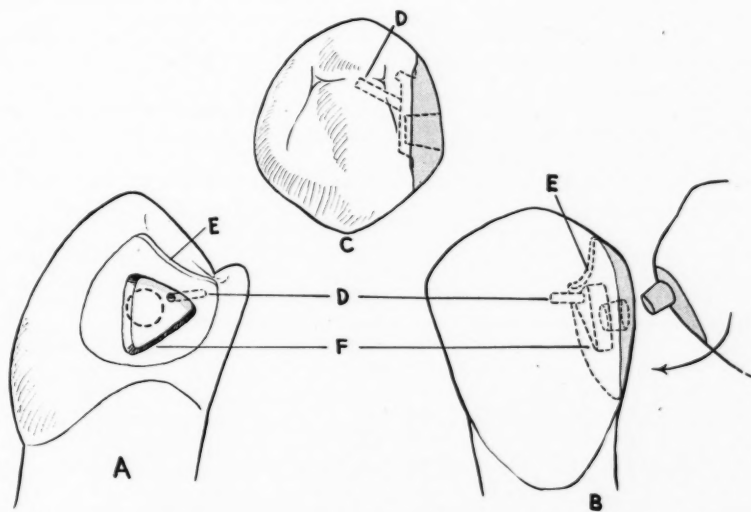


Fig. 2—"Contact cup" bridge abutment—A, Distal, showing slice, box, and pin hole. B, Buccal. Note position of pin, box, and cup. C, Occlusal. Note position of cup, box, and pin. D, Pin placed under occlusal and directed away from buccal horn and between cusps. E, Occlusal bevel. F, Triangular box.

4. A pin hole is made under the occlusal surface in about the position and as far under as the depth of an occlusal retention inlay. This pin hole is prepared parallel to the sides of the box and in the dentine so as not to undermine the occlusal enamel. Care must be exercised not to direct this pin toward a horn of the pulp.

5. A roentgenogram will determine the position of the pulp.

6. This inlay is easily made by the direct method:

a. A pin is fitted and the bent end turned away from the position of the cup to be carved on the contact.

b. Wax is forced into the cavity and smoothed with strips or discs.

c. The wax is easily polished on the tooth and the sprue attached near the occlusal margin, parallel to the pin.

d. The pattern is withdrawn and a large round bur used to drill the cup on the contact.

e. The cup is squared with a tapering fissure or an inverted bur, if the split post is to be used. The split post will be explained later.

*Impression for Jointed Bridge*—1. After the inlay is cast, it is fitted, polished, and cemented to place (Fig. 3).

2. The molar preparation is then made. It should be kept in mind that this abutment must swing to place with the post in the cup of the bicuspid abutment. The mesial wall and the distal wall or cast pin may be slightly tapered to allow this abutment to swing to place.

3. When this abutment is ready and the impression for the bridge is to be taken, a piece of metal about 28 gauge is bent at right angles and adjusted to the bicuspid to form a tray.

4. Compound is warmed in this tray and carried to place on the distal of the bicuspid.

5. This metal tray is lubricated and the bridge impression taken to plaster. The tray does not come out with the impression if there are no undercuts or the plaster does not become hot.

6. This cup impression is then removed distally and inserted in the plaster impression.

7. The molar abutment is lubricated so that it can be removed from the cast.

8. A stone cast is run which reproduces the contact cup.

9. This cup is lubricated and filled with inlay wax.

10. When the wax of the pontic is carved and ready to be cast, a hot instrument is passed between the pontic and contact cup, sealing the wax post to the wax of the pontic.

11. Teasing the molar abutment

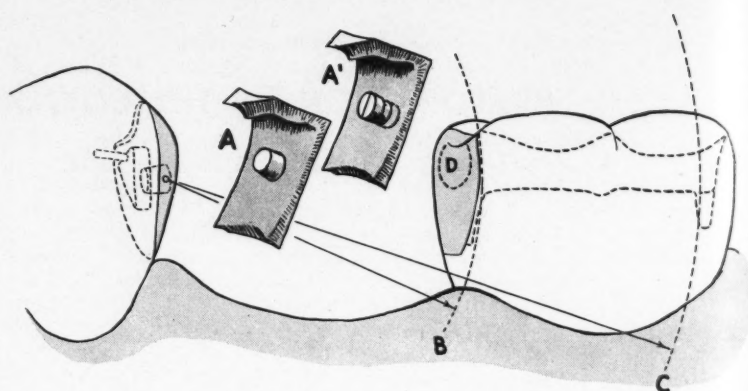


Fig. 3—Impression for jointed bridge. A, Metal bent at right angles to form tray. Compound impression of distal cup. A', Split pin removed in impression when distal resistance is desired. B, Mesial arc of movement in setting bridge. Anterior step must not undercut this plane. C, Distal arc of movement. Pin or distal step should also conform to this arc. Both mesial and distal walls are slightly tapered. D, The only soldered or cast contact.

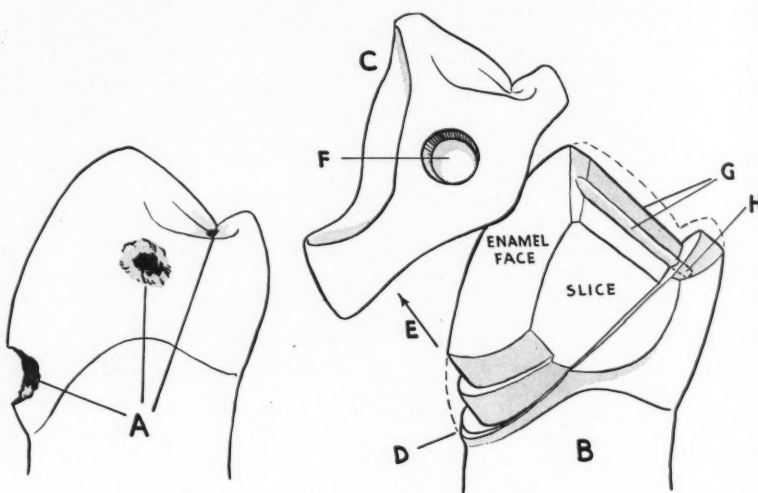


Fig. 4—Cast collar for bell-crowned bicuspid. A, Susceptible areas for caries; B, cast collar preparation instead of cast crown; C, cast collar abutment; D, gingival bevel; E, direction of draw; F, contact cup for attaching bridge; G, grooves, mesial and distal, ending in H, shallow pits.

out of the cast allows the pontic with its wax post to be removed.

12. After the pontic is cast the bridge is reassembled on the model and waxed between pontic and molar.

13. Only this contact is soldered.

The contact cup and post allows slight movement and prevents a strong molar from loosening a weaker bicuspid abutment.

*Split Post*—The split post may be used if it is feared that the molar will drift distally.

1. The split post is made by using two short pieces of 14 gauge half-round wire.

2. These pieces of wire are placed with the flat sides together and tacked with solder at one end to form a split post at the end fitting in the contact cup.

3. The cup is undercut and a notch cut around the split post.

4. When the bridge is to be set, the two halves of the post are spread slightly apart so that the post snaps into place in the cup. This offers resistance to distal movement.

5. The split of the post should be placed vertically.

*Cast Collar Abutment for Bell-Crowned Bicuspid*—A bicuspid is often found with cervical, contact, and occlusal decay. A strong abutment may be made by encircling the buccal cusp but a small amount of gold will show on the occlusal and mesial. This type of preparation, however, leaves the middle and occlusal thirds of the buccal surface free of gold and is less unsightly than a cast crown. If there is little bulge



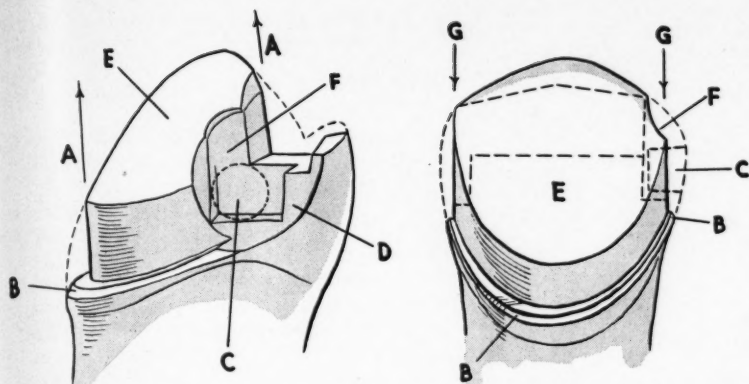


Fig. 5—Cast collar abutment for thick-necked bicuspid. A, Angle of draw parallel to long axis; B, cervical bevel to remove unsupported enamel rods; C, position of cup on contact; D, slice on contacts; E, enamel face. No gold to reflect light; F, step or box on distal to accommodate cup; G, slice on mesial and distal to shoulder.

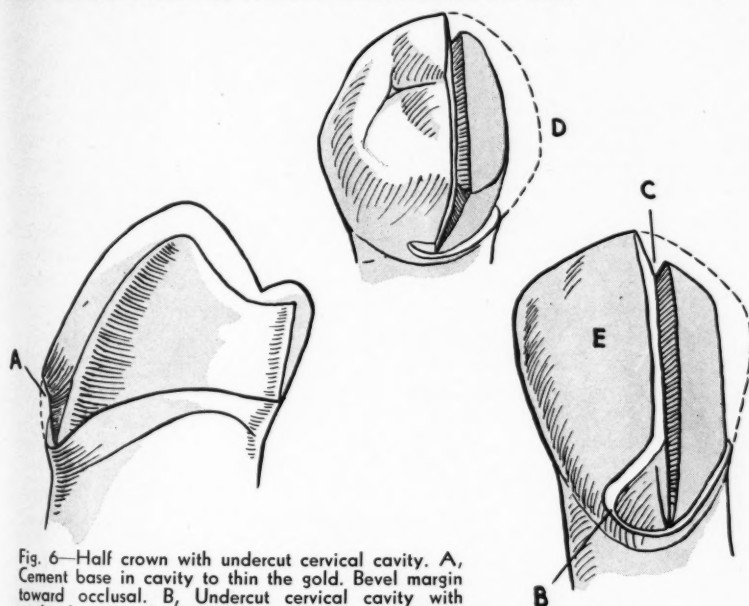


Fig. 6—Half crown with undercut cervical cavity. A, Cement base in cavity to thin the gold. Bevel margin toward occlusal. B, Undercut cervical cavity with occlusal margin sloped toward occlusal so as to bend wax outward when removing pattern. In setting, cervical flange is burnished to place. C, Groove made with small disc on buccal, occlusal, and lingual. Tapering fissure bur used on buccal and lingual to make pits on shoulder. D, Amount of distal slice and shoulder taken off to prepare parallel. E, Enamel face preserved. Distal half of buccal face does not reflect gold in the mouth. Distal half of occlusal shows little gold.

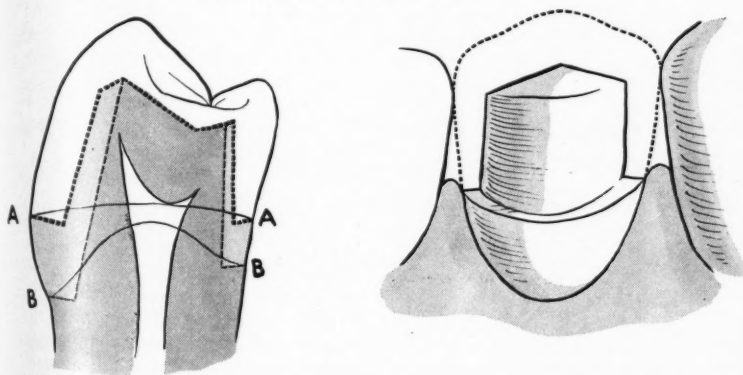


Fig. 7—Porcelain crown preparation for lower bicuspid. A, Buccal and lingual margins placed at junction of middle and gingival thirds. Conserves tooth structure and protects pulp. B, Danger to pulp in placing margin beneath gingival in bell-crowned teeth. Occlusal half of crown on lower bicuspid, the conspicuous part.

to the buccal surface, this preparation may be made almost parallel to the long axis of the tooth. The contact cup allows this type of preparation to seat at a different angle from the molar abutment (Fig. 4).

By encircling the buccal cusp the strongest part of the tooth is gripped. The band of gold in the cervical third is not noticeable in the mouth. This preparation is made parallel or in line with the lingual incline plane of the buccal cusp, when there is a deep sulcus. The thickness and strength of the cervical portion must be considered and is a guide to the angle of the preparation.

**Cast Collar for Thick-Necked Bicuspid**—If there is little or no bulge or bell-crowned effect to the buccal surface the cast collar may be made nearer a parallel to the long axis. This preparation can be made with discs and small stones similar to the cast crown preparation. Care must be exercised not to leave unsupported enamel rods in the cast collar preparations (Fig. 5).

**Half Crown Preparation**—On some bicuspids without pits or decay on the mesial half of the crown but with distal-occlusal or contact decay, the "half crown" preparation may be employed. For inlays, hoods, or half crowns when the mesial face of the buccal surface is unmarred except for a slight cervical cavity that underlies the face of enamel, a preparation may be made allowing an impression or wax pattern to be removed without destroying the conspicuous part of the tooth.

1. The half crown preparation is made by grooving the lingual, occlusal, and buccal with a one-fourth inch vulcanite disc.

2. The distal is sliced, the enamel and all decay removed, and the buccal and lingual grooves are improved with tapering fissure burs.

3. If there is an undercut cervical cavity, it is prepared, and the occlusal margin is sloped and beveled toward the occlusal.

4. A cement base is used to make the casting thin in order that this extension may be burnished to place when setting this half crown (Fig. 6).

**Undercut Inlay or Hood**—1. The undercut type of inlay or hood is easiest made by the direct method; however, an impression may be taken by trimming away the portion of the copper band that covers the undercut.

2. When the impression is chilled and removed, the undercut portion is broken off or bent out.

3. This undercut portion can be pushed back to place and sealed with sticky wax.

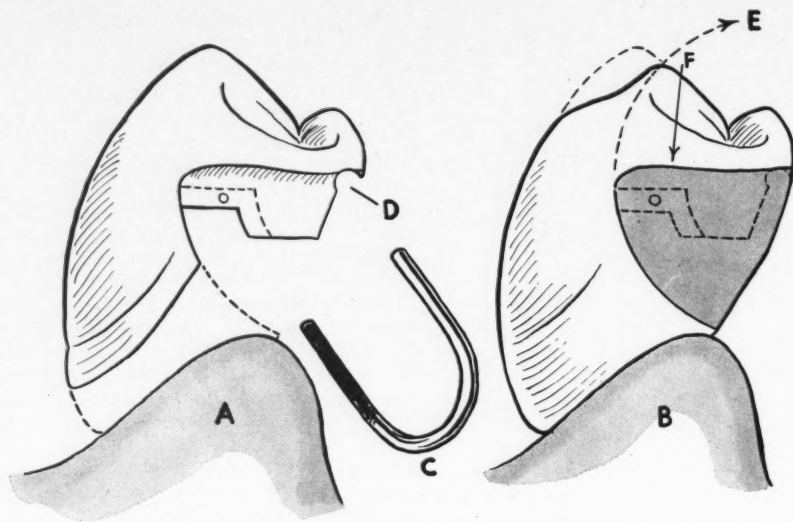


Fig. 8—Porcelain pontic from a diatoric tooth. A, The tooth is aligned to the ridge with wax. Occlusal core run and the saddle baked. B, Finished pontic with cusp ground back over cast cradle. C, Compass made from paper clip. D, Groove as center of movement in which to place compass. E, Direction of movement of porcelain off cast cradle. Reverse to cement pontic on bridge. F, Force of occlusion supported by cast cradle.

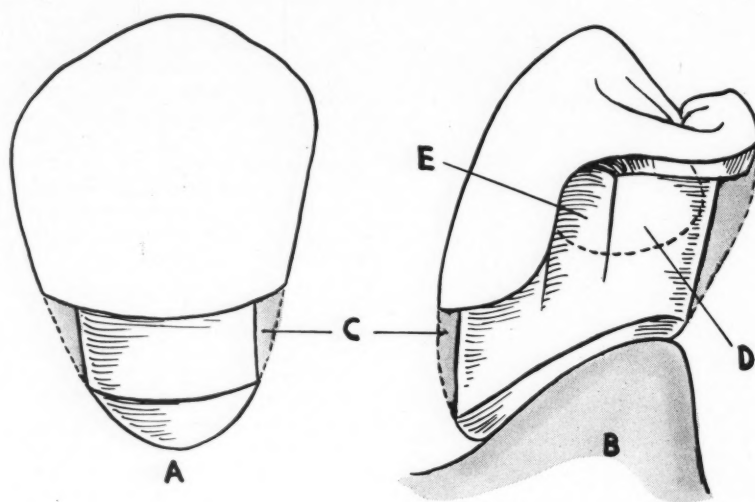


Fig. 9—Cast collar pontic made from tube tooth or solid type tooth. A, Buccal band of metal in gingival third; B, mesial or distal view showing thickness of collar; C, groove, E, and soldering or casting contact, D.

4. Elastic impression material may be used in a tray.

5. If carved direct the undercut is bent out on removal and bent back on setting.

**Porcelain Jacket on Bell-Shaped Bicuspid**—On a bell-shaped bicuspid, the buccal and lingual cervical margins of the porcelain jacket preparation are best left at the junction of the middle and cervical thirds. This prevents approaching too near the horns of the pulp. Also the margins may be finished on the tooth before

glazing without injury to the gingiva. The margin is inconspicuous in this area.

**Diatoric Saddle Pontic**—Pontics for the lower bicuspid need porcelain on the occlusal surface to be unnoticeable and esthetic (Fig. 8). In order to obtain strength the cusps must be supported by a strong gold casting. Most teeth that need bridging show some wear, and therefore the cusps can be ground off; thus lateral stresses are reduced. One type of pontic having porcelain on the

three essential surfaces, occlusal, face, and saddle, is the diatoric saddle pontic.

1. A diatoric tooth is selected as to size, shape, and color.

2. This tooth is aligned on soft wax and a plaster core run across the occlusal surfaces.

3. The preparation of the tooth is then made by cutting a notch under each contact to form a bar supporting the buccal cusp.

4. The saddle is added in an arc with the lingual margin of the preparation as the center of the arc.

5. The lingual margin is grooved mesio-distally and a compass made from a paper clip is used to true the curved surfaces. Carbon is rubbed on the moving end of the compass.

6. The well, notches, and lingual surface of the saddle are all made to conform to this curving movement with the lingual groove as the center.

7. If all surfaces of the preparation are in harmony with this common center, then the pontic can be rotated off and on the cast cradle.

8. The buccal cusp is ground off to bring the stress over the cast cradle.

This pontic offers considerable strength and can be used in most cases, except in cases of extremely short bites. The Trubyte twenty degree posteriors and French's teeth offer the best type of diatorics for use at present.

**Tube or Solid Tooth Pontic**—Another pontic with the saddle, face, and occlusal surfaces of porcelain is made from a tube tooth or solid type porcelain tooth.

A collar is prepared around the tooth with the band nearer the gums on the buccal. This collar is reinforced by two pillars (or grooves in the porcelain) just below the contact points. This ring of metal completely encircling the pontic and leaving the porcelain to touch the tissue makes a strong type of pontic. As the band of metal on the buccal is in the gingival third, it rarely shows. This type of pontic has been successfully used for a number of years.

The objection to this pontic is that it cannot be used except in long bites, because the sides would have to be curved in too deeply in short bites.

#### CONCLUSION

All these preparations on both teeth and pontics may be used elsewhere in the mouth but they are more applicable to the lower bicuspid. The stresses in the lower jaw seem to loosen the weaker abutment unless we combat those stresses or relieve them. The appearance to the mouth is of more concern now than a few years ago. Patients expect more of us.

## The Editor's Page

**A**MONG the advocates for changes in the distributive system for supplying medical care to the American people there is probably no stronger proponent than C.-E. A. Winslow, professor of public health, Yale University School of Medicine. Doctor Winslow was one of the signers of the Majority Report of the Committee on the Costs of Medical Care which, in essence, recommended group practice and group payment. Doctor Winslow in a recent publication<sup>1</sup> makes the following statement:

"Fifty years ago the objectives of public health were fundamentally engineering in nature. At the turn of the century, they were largely bacteriological. Today, medical interests are predominant. In the future, health promotion must be recognized as in essence one of the *social sciences*." Up to 1880 sanitation of the environment was the chief interest of public health workers. A half century ago, public health activities were directed toward the improvement of the condition of urban dwellers. At the turn of the century following the contributions of Pasteur, the emphasis changed to the control of communicable diseases, and in the quarter century from 1901 to 1925 the average length of life was increased from 48 years to 58 years. So much is history.

Regarding Doctor Winslow's prophecy that public health of the future will be built upon the base of social science, we can hardly take exception. In a symposium given at a meeting of the Milbank Memorial Fund on March 26-27, 1936, apparently there were recognized two forms of health service: "direct" as represented by the medical care of individual persons and "indirect" as represented by those health services attainable only through organized group action. Under "direct" care this conference suggested, "medical care of all individuals, including care by physicians, nurses, hospitals, and dentists, who are unable to provide such care for themselves." "Indirect" health services are those built upon the social sciences, as Doctor Winslow called them, which include adequate housing, nutrition, high wage standards, and social security legislation.

The health professions are probably ready to accept the statement that all these "indirect" health services are of importance in public health. The proponents of socialized

medicine must be prepared to advocate not alone the socialization of the "direct" health services but the "indirect" facilities as well. Under *adequate housing*, it must be recognized that the "lower third of our population from an economic standpoint simply cannot pay a full economic rental for houses of decent quality." In other words, one-third the population of the United States is to receive a subsidy to pay for their living quarters. If the same percentage holds it would mean that 40 million people in the United States would receive a part subsidy for food to maintain their level of nutrition.

The propertied classes, as represented by landlords, the processors and manufacturers of food stuffs, would, we can anticipate, cry socialism and communism if these "indirect" health benefits are to be provided. These same propertied people, who, incidentally, have created most of the funds and foundations, do not apparently fear the communism or socialism which would be effected if the subsidy of the "direct" types of health service was instituted.

The "direct" type of health service is mainly curative. If this type is to be subsidized with the intelligent objective of providing lasting benefit, then the "indirect" or preventive type of service is indispensable and must also be subsidized. That is to say, it would do little good to correct an illness resulting from malnutrition only to send the subsidized patient back to his inadequate life. Adequate nutrition would have to be provided so long as the recipient of "direct" care remained indigent and in need of "indirect" attention.

In any discussion of adequate public health care, it would appear that if the health professions concede to the advocates of socialized medicine the need for providing the "direct" type of health service, the professions would then be justified in demanding that full responsibility be assumed and the "indirect" benefits also be furnished simultaneously. The one without the other would be ineffectual and the possibilities of improving public health would be largely nullified. The health professions can logically oppose arguments raised by the proponents of socialized medicine if they point out the futility of their plans unless they go all the way. Are the advocates ready for *complete* socialization with all that this term implies?

<sup>1</sup>Winslow, C.-E.A.: When Is Health Public? Survey Graphic, 25:373 (June) 1936.



## ODONTOMA: A RARE TYPE: REPORT OF A CASE

FLOYD E. STRAITH, D.D.S.

Detroit

THE following case of an odontoma of the mandible is interesting and unusual because of the outward evidence of the growth, lack of complaint by the patient, the need for complete roentgenographic examination of the area, difficulty of removal without fracture, and the difference between the clinical and microscopic diagnosis.

C. C. R., aged 30, a married woman, was referred to the office on March 15, 1933 for the removal of an impacted lower left third molar.

*History*—The patient had consulted her dentist recently regarding an outward enlargement over the left angle of the mandible which friends had noticed three or four months previously. She had no other complaint of local discomfort or pain. There had been some discharge recently within the mouth from the area distal to the second molar. The patient brought a small roentgenogram of the area which showed markedly increased calcification distal to the second molar.

*Clinical Examination* — External examination showed an outward enlargement over the left angle of the mandible which was hard to the touch, fixed to the mandible with the overlying tissues freely movable, nor-



Fig. 1—Outward evidence of growth at left angle of mandible.

mal in character, and not painful on pressure (Fig. 1). There was no fluctuation, edema, or redness. The mass involved the angle of the mandible from its lower border to the

alveolar ridge, 2 cm. in width mesiodistally and involving the lingual surface beneath and slightly anterior to the angle of the mandible. Movement of the mandible was not impaired.

Oral examination revealed the teeth in good condition. The lower left and right third molars were missing from the arch. The lower left third molar area revealed a marked enlargement of the ridge both buccally and lingually with some redness of the mucous membrane. A hard irregular mass could be felt beneath. A probe passed distal to the second molar beneath the mucous membrane came in contact with a rough, hard surface below the mucosa.

*Roentgenographic Examination*—A roentgenogram of the area revealed the crown portion of an unerupted third molar distal to the occlusal surface which was at the level of the apexes of the second molar roots (Fig. 2). Overlying the crown of the third molar and distal to the second was an area of dense bone tissue extending to the crest of the ridge and distally. A lateral extra-oral roentgenogram revealed the crown portion of the third molar in a vertical position with the roots curving abruptly distal along the inferior

Fig. 2—Unrupted third molar and increased bone density above.

Fig. 3—Extent of calcified mass, line of separation, and position of roots in relation to lower border of mandible.

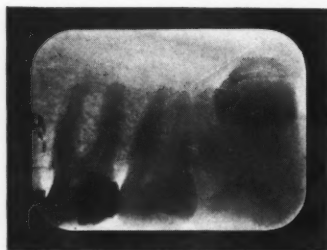


Fig. 2



Fig. 3

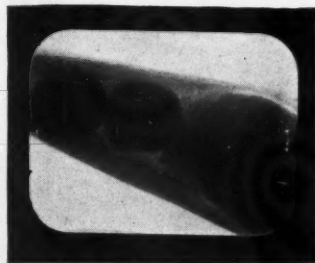


Fig. 4

Fig. 4—Buccal lingual dimension.

Fig. 5—Shell of bone left at inferior border following removal.



Fig. 5

border of the mandible (Fig. 3). Approximately 1 mm. of bone remained beneath the roots. Overlying the tooth lay a calcified mass approximately 2.5 by 2.5 cm. clearly delineated and apparently separated from the surrounding bone. An occlusal roentgenogram revealed its buccolingual diameter as 2 cm. (Fig. 4).

*Clinical Diagnosis*—A clinical diagnosis was made of a dentigerous cyst with calcification of cyst fluid.

*Operation*—On March 17, 1933,

1713 David Whitney Building.

under conduction anesthesia (procaine hydrochloride, 2 per cent) the overlying mucous membrane was incised and reflected. The overhanging bone on the buccal and the calcified mass were removed with rongeurs. The tooth was elevated distally and removed with the roots intact. The cavity was packed with vaseline iodoform gauze. The patient was placed on a soft diet for two months. Recovery was uneventful (Fig. 5).

*Pathologist's Report*—"The speci-

men consists of a molar with incompletely developed roots and several irregular, hard, bony masses which can be fitted over and around the cusps of the tooth. Sections show an eburnated mass of bone and dentine. There is no enamel and no definite root and crown arrangement. The mass is traversed by canals carrying blood vessels.

"Diagnosis: Odontoma with impacted third molar."

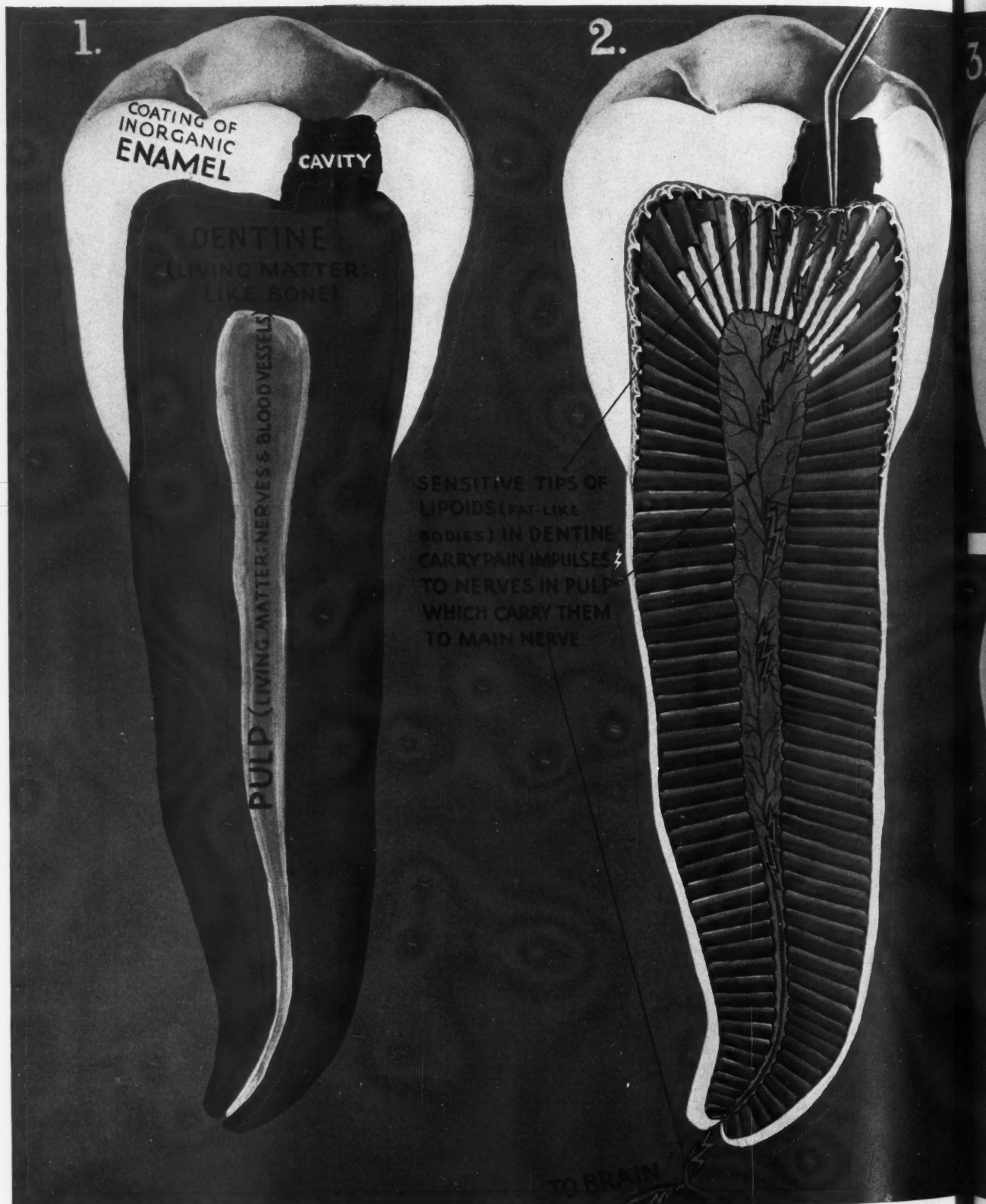
## A. D. A. CONVENTION - JULY 13-17

One of the world's famous thoroughfares is Market Street, San Francisco, 1936 American Dental Association convention city, where next month's annual meeting will be held.



# THE EDUCATION OF THE DENTAL PATIENT.

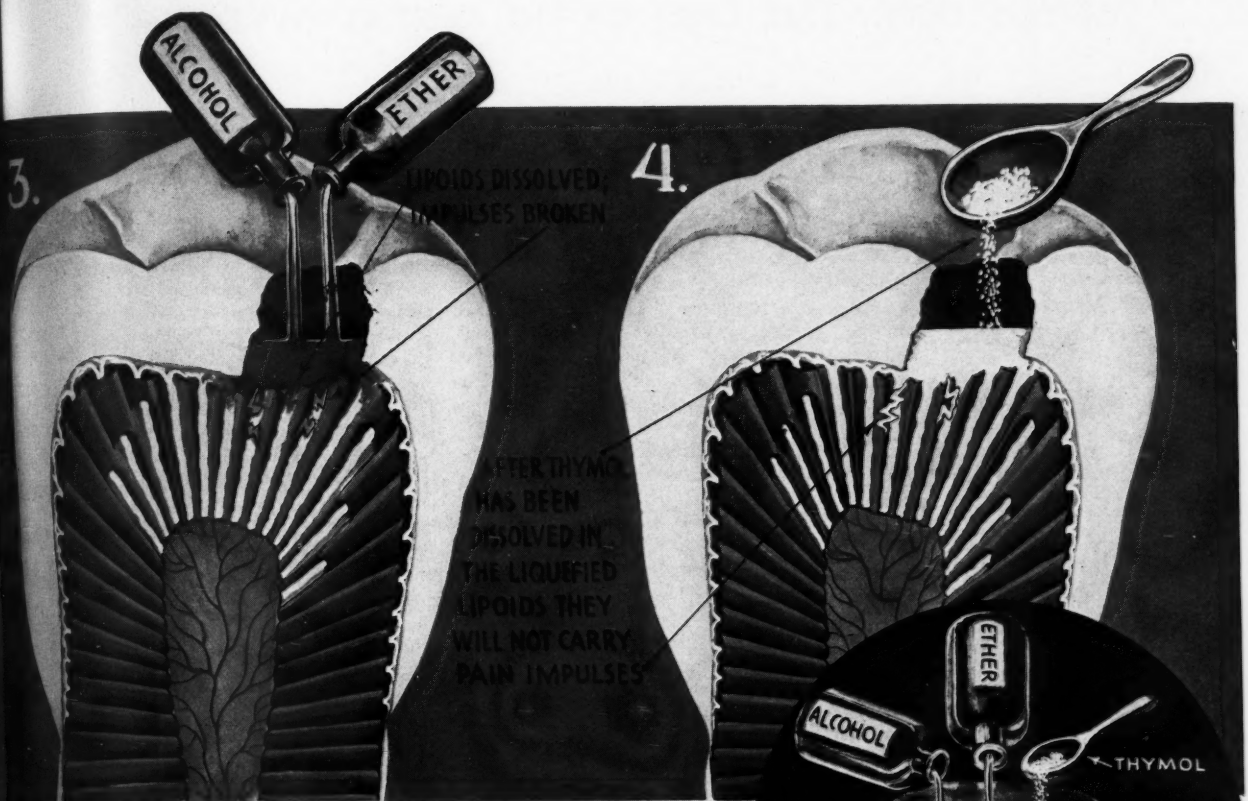
(A Desensitization A



\*This is the fifth chart in the third series intended for the use of the dentist in explaining to his patients important normal and pathological conditions of the tooth.



# V. ACTION OF THE HARTMAN SOLUTION (Anesthetic)

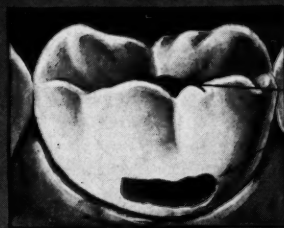


## USE AND LIMITATIONS

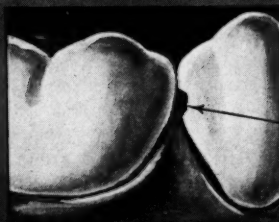


MANNER OF APPLICATION:  
SOLUTION IN SATURATED  
PELLET ABSORBED BY DRY  
COTTON WHICH ACTS AS  
WICK TO CARRY THE  
SOLUTION INTO THE TOOTH

HARTMAN SOLUTION DOES  
NOT DESENSITIZE NERVES  
AROUND ROOT OF TOOTH.  
CANNOT BE USED FOR  
EXTRACTION



SOLUTION WORKS  
BEST IN ACCESSIBLE  
CAVITIES WHERE  
FOUR WALLS  
ARE STANDING



DOES NOT WORK  
WELL IN INACCESSIBLE  
CAVITIES

# THE POSTOPERATIVE CARE OF THE DENTAL ALVEOLUS

M. HILLEL FELDMAN, D.D.S.

New York

THE removal of a tooth may be attended by little reaction evidenced by pain or swelling. The operation may, on the other hand, be characterized by a progressively aggravated train of distressing symptoms. The reason lies in the degree of resistance to delivery which the bone may offer to the extracting movement.

## FACTORS IN POSTOPERATIVE PAIN

1. A tooth which is loose as a result of extreme loss of bone investment and which has no abnormality of root formation usually will not cause any disturbance to the patient.

2. Similarly, postoperative distress is unlikely to occur if there is a disintegrating change in the bone investment owing to disease, because the extraction will then be simple.

3. When a tooth is seated in highly calcified alveolar bone, the force needed to free it is necessarily greater than in the instance of the loose tooth, or the tooth whose bone crypt is less dense. Pain in such cases is to be expected.

4. It is not difficult to see why the incidence of a malformation of a tooth root should be attended by painful symptoms.

5. When a hypercementosed root is delivered en masse, something has had to "give way" in the bone investment. This might be either in the nature of a burnishing of the mouth of the alveolus, or a fracture, or a spreading of the buccal or lingual alveolar plates. By "burnishing" I mean that the hypercementosed dense mass of root-end formation crushes the mouth of the alveolar opening where the diameter of the mass is greater than that of the alveolar opening through which the tooth must pass in its removal. When this occurs, it is not unusual to note the sequence of pain owing to the crushing of the tender nerve-endings; such as in the case of the "burnished" bone, or a pinching of the nerve-endings in the spreading of the alveolar walls.

6. Marked divergence of molar roots is naturally responsible for a great deal of postextraction discomfort. In brief, wherever the diameter of the mouth of the alveolus is less than that of the apex of the tooth or apical spread of a multirooted tooth,

there will be a definitely severe resistance to delivery en masse. At this point, should delivery occur without fracture, pain almost invariably results in the alveolus and its surrounding soft tissues. This pain, then, is due to the pressure against the bone, with or without a spreading of the bone margins at the cervical area of the tooth. If, on the other hand, the tooth fractures, because of the unyielding nature of the bony investment, the postoperative pain is due to the trauma incident to the operative steps necessary to remove the fractured root.

7. In the engagement of the beaks of the forceps upon the tooth there is frequently a crushing of alveolar tissue below the gingival ridge. This is unavoidable in the main. Our problem is to attempt to eliminate this condition as a factor in the etiology of the postextraction pain in the alveolus. These areas are best handled by rounding off with rongeurs and curets, so that nothing will remain to act as a mechanical irritant to the soft parts. One is less likely to overlook these points of irritation when there is a preliminary muco-periosteal elevation. In this way the expanded alveolar margins and the jagged grooves made by the beaks of the forceps may readily be closed.

8. There are two other instances in which portions of alveolar tissue act as mechanical irritants among the factors responsible for the onset of postextraction pain. These are the loosened septal walls between the roots of the molars, and the loosened partition walls separating several adjacent teeth which are being removed at the same sitting. In my experience, it is not well to leave such bone tissues in place in the hope that they will reattach themselves to the body of the bone. While this may at times take place, it is trusting too much to chance. It is best to attend to their removal at the time of extraction.

9. If local anesthesia has been employed for the operation, and there is no evidence of bone displacement around the alveolus to account for the patient's discomfort, it is likely that the hypodermic needle may be responsible for the pain. This may occur by reason of a scraping of the peri-

osteum or of the bone itself, and sometimes by the deposition of the anesthetic fluid under the periosteum.

Postoperative pain may follow the use of a local anesthetic as well as a general anesthetic. Such pain may follow the work of the highly trained operator as well as that of the less experienced. It is a normal manifestation and is no reflection on the operator.

## TREATMENT

While it is true that a healthy blood clot is the best dressing for a socket following the removal of a tooth, there are many factors which may make it necessary to apply a dressing.

*Anodynes*—In the early treatment of the painful alveoli, it is necessary to prescribe anodynes for the relief of severe suffering.

*Alveolar Dressing*—Satisfactory results have followed the introduction of a dressing into an alveolus when there has been more than usual tissue resistance to delivery.

*Purpose of Dressing*—The dressing of such an alveolus helps to lessen the severity of the postoperative reaction. There ought not be any waiting for the effects of severe pain to develop the next day. It is best to introduce the dressing immediately following the operation.

*Composition of Dressing*—An excellent dressing to insert into the alveolus is one consisting of anesthetic or orthoform combined in equal parts with thymol iodide. The powder is incorporated with vaseline on a strip of plain gauze sufficient to fill the entire cavity. It is best to use one strip of gauze for each alveolus of a multirooted tooth. A few drops of eugenol may be added to the mixture when more than the usual amount of pain is felt or anticipated.

*Removal of Débris*—Before introducing the dressing it is important to examine each alveolus with a cotton applicator and a suction tube and a small curet to be sure that no alveolar or root fragments or filling particles are permitted to be retained. This debris frequently gets into the deep alveoli when the mouth is washed and may be overlooked by the operator. It is well to remember that even though the alveolus may look per-

Fig. 1—Many operators incorrectly employ for fulcrum stress the point marked "A" in the center of the septal alveolar wall when a mesial or distal molar root is to be elevated from its alveolus. Postextraction discomfort with the distressing symptoms coincident with a "dry socket" result therefrom.

Fig. 2—Area Marked "B" is the correct point for fulcrum stress by the extracting lever. The buccal gingival ridge should always be utilized for the purpose of introducing the lever blade in a vacated alveolus to deliver a retained molar root. Following the root-delivery, correct technique of curettage and bone trimming removes the buccal gingival border which bore the lever stress. When a proximal alveolar septal wall is used for lever stress, it is not possible to remove the injured bone that forms the wall of an adjacent tooth.

fectly clean and free of foreign bodies immediately following the operation, débris may creep into the sockets during the subsequent rinsing by the patient.

**Irrigation**—It is frequently advisable to irrigate the alveoli thoroughly with a solution of sodium perborate or normal salt before the dressing is introduced.

**Cold Compress and Removal of Dressing**—The patient should be asked to return the day following the operation for removal of the dressing. If the face has swollen the application of cold compresses on the outside is favored for ten minute periods at a time, with ten minute intervals. The dressing which has been removed is renewed, with the same ingredients, or if all pain is absent, with only the thymol iodide and vaseline combination.

**Medicated Cement Dressing**—A medicated cement dressing may be used following the first day, instead of the combination described. If there is little hemorrhage on the first day, the medicated cement dressing makes an ideal agent for an alveolar protection. I find that if there is much oozing during the crystallization of the medicated zinc oxide combination the value of the perfect seal may be lost.

**Antiseptic Precautions**—On the daily return of the patient for dressing of the alveolus, a cotton applicator dipped in hydrogen dioxide is introduced into the cavity and before a new dressing is applied, the patient is given a mouth wash, or the mouth is irrigated.

Dressings are renewed at regular intervals until such time when the wound can be kept clean by the patient, and there is a layer of new epithelial tissue seen in the cavity.

**Drainage**—Acute symptoms of inflammation and fluctuating swelling either intra-orally or extra-orally indicate suppuration about the area of operation. If such complications arise the operator must be prepared to establish drainage by incising the area of fluctuation.

**Complication** — Occasionally a

socket will slough and show ulcerative changes of the gingival borders, with an extension of the eroded gingival line to the adjacent teeth. The treatment of such an alveolus is the same as is usually given in a case of Vincent's infection. My treatment consists of the introduction of a tampon of cotton saturated with arspenamine in dextrose into the alveolus for ten minutes, followed by a thorough rinsing of the mouth with sodium perborate. The cavity is then

dried as well as possible and the thymol-iodide-orthoform paste introduced on vaselined gauze.

#### CONCLUSION

Utmost care should be taken in the pressure against bone during tooth delivery to prevent the severity of the postoperative pain. In other words, the most effective treatment in the postoperative care of the dental alveolus is the preoperative approach and careful operative technique.

Fig. 1

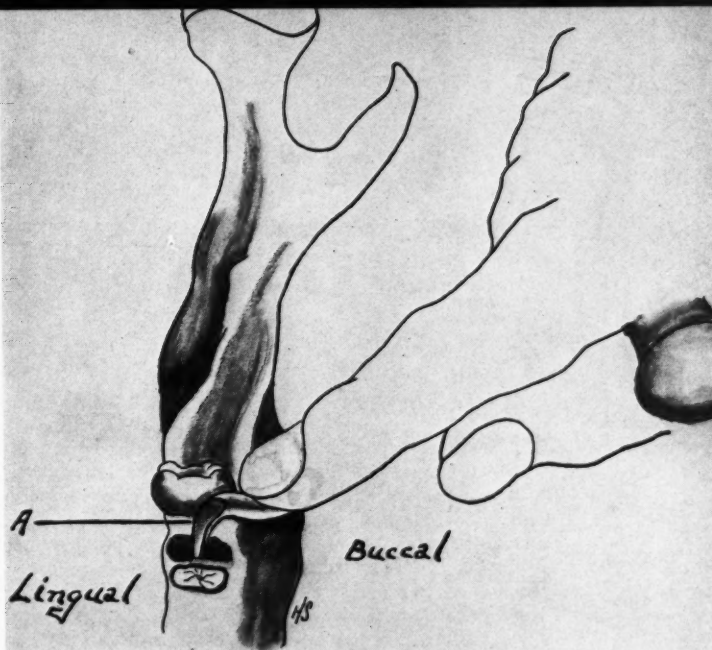
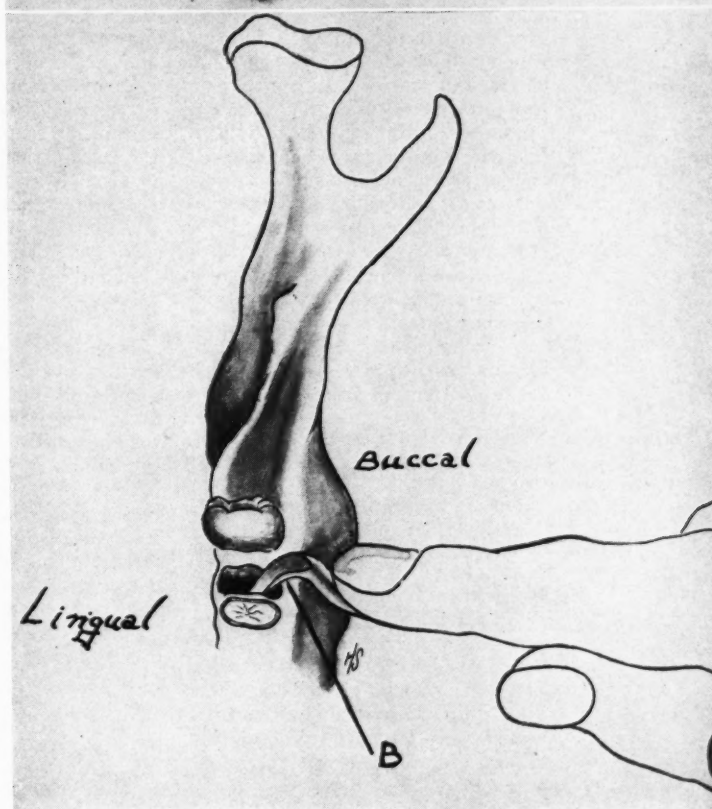


Fig. 2





## DENTURE ESTHETICS

F. J. HOELSCHER, D.M.D.

Seattle

**T**HE construction of dentures today is made simpler by the improved methods of impression taking, new articulators, centric and gothic arch tracing, and various forms of improved teeth. The inlay technique has progressed to the point where almost everyone is capable of casting a good inlay. It should be possible for all dentists to construct good dentures. If more time and effort would be given to the study of tooth harmony in dentures, we would begin to appreciate an important phase of restorative prosthesis. The time is near when dentists will be compelled to give the study of tooth form, arrangement, and color more attention in the construction of dentures.

Along with the study of tooth selection more time could be spent in procuring true centric relationship, correct vertical openings through more accurate study of bite rim relation, and particularly to try-ins prior to the final curing process.

### USE OF FULL AND PARTIAL DENTURE CHART

The full denture chart helps one to select proper teeth with regard to form, size, and color before the actual construction of the denture is started. A permanent office record is provided giving the molds, forms, shades, and so on of the teeth used in case replacements are necessary. The color arrangement is also given in detail on this denture chart; likewise the three typical face forms, and tissue classification.

### SELECTION OF TOOTH COLOR

It is a simple matter to place the patient in the proper complexion class: Fair, Red, Gray to Brown; also, to select the proper tooth form from the shape of the patient's head, as well as the correct tooth length. This can be done quickly with some sense of color harmony, eliminating our past haphazard methods of spinning shade guides in the hope that they would fall on the lucky number! In other words the shades necessary in a case are definitely decided before shade guides are consulted.

A chart of the primary colors, red,

yellow, and blue enables one to see that the green which we sometimes see in our patients' teeth is in reality a mixture of blue and yellow; the purple, a combination of the primary colors blue and red; if orange, the combination of the two primary colors, red and yellow. The orange color is affected by the addition of the red or yellow in it, but is still orange. These primary colors appear and are found in all teeth; therefore it is important to make a study of the primary colors and their combinations so as properly to determine the various shades found in patients' mouths. The operator should make it a point to observe the patients that come into his office and try to determine the colors in their teeth, particularly to associate the incisors and cuspids for primary color combinations.

It is helpful to cut out the inner portion of a New Trubyte shade guide and fill in with crayon the colors that are indicated on the back, marking with yellow the colors 39 through 50, with red 51 through 57, tobacco brown 58 and 59, and with blue gray 36 through 38; thus when a patient of the Red complexion type presents himself, for instance, it is only necessary to select the numbers which appear opposite the color found in the case. The saturation of these colors increases as the numbers increase. In other words this color scheme is perhaps a little surer and safer way to select the color in teeth than any random method.

### BITE PLANE RELATION AND ARRANGEMENT OF TEETH

More time should be spent in correcting the vertical height of the compound bite rims and the labial and buccal contours than is usually devoted. Too often the plane of the bite rim is too flat. The bite rims are not flat angle planes, but represent the angle that the teeth are expected to occupy in a practical case. After the proper height of the upper bite rim is determined, the teeth are set up and returned to the mouth for checking the esthetic and vertical arrangement. In a well arranged dentition, the occlusal plane is parallel

to a line drawn from the ala of the nose to the external auditory meatus. In a full smile or laugh the upper lip line is generally a line parallel from the ala of the nose to the lobe of the ear; from an anterior position the median line runs through the incisors, and the upper and lower lip portions are parallel lines to a line drawn through the pupils of the eyes; therefore, from a study of natural dentitions where there is marked tooth harmony, as is illustrated in the accompanying diagram one can easily see by comparison the factors that should be incorporated in the dentures.

In a well arranged dentition the front of the mouth or incisal plane is the lowest point of the bite rim. The lateral plane becomes more acute, so that when the patient smiles the most prominent place is the front of the mouth or central incisor area. The vertical dimensions of the remaining teeth seen in the smile become less as the lower lip envelops the labial and buccal cusps. This in turn enhances the beauty by tending to keep the width of the mouth in conformity with the remainder of the facial features. The natural smile as seen in the ideal esthetic profile view will reveal on each side the central, lateral, and cuspid, first bicuspid, and mesial of the second bicuspid. The lower lip in many cases covers the buccal cusp of the second bicuspid. The darker shadow at the corner of the mouth tends to give the appearance that the teeth stop in their distal trend at this point. If the planes are too flatly made we are often able to see back to the second molar area, giving the appearance of an oversized poorly arranged set of teeth, exaggerated frequently by a poor selection of shades and colors. Thus by correcting the bite rims through the aid of a natural smile or laugh of the patient we are able to adjust the rims or teeth to conform with the arrangements which should follow. The smile or laugh must be natural, and can be produced by telling the patient something humorous. I cannot put too much emphasis on the fact that this natural smile or laugh is the guide for final arrangement of teeth.

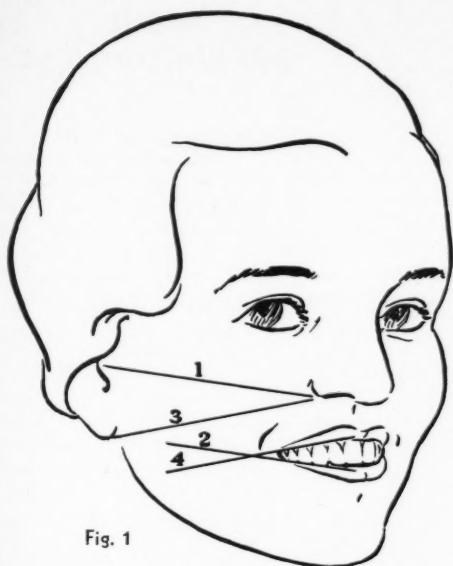


Fig. 1

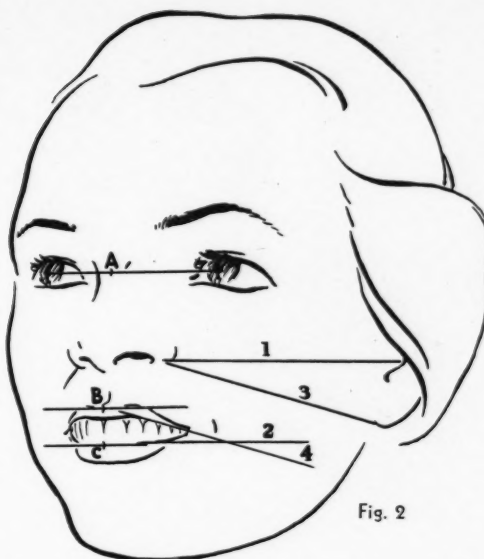


Fig. 2

Fig. 1—A lateral study of the planes made by the teeth and lips. A well balanced set of teeth. The plane of the upper lip marked "4" is a fairly straight line and were it continued on, it would be found to be parallel to the line marked "3" drawn from the ala of the nose to the tip of the ear. Line 2 represents the occlusal plane of the teeth and is parallel to line 1, the imaginary line drawn from the ala of the nose to the external auditory meatus. The importance in this lateral study reveals the fact that the highlight of the mouth is the median portion; that is, the highest point of the upper lip and the lowest point of the lower lip is in the median line; also that the teeth as they appear distally seem to become shorter owing to the enveloping of the lower lip at the corner of the mouth and the inclination of the occlusal plane of the teeth themselves in their distal trend. This rule invariably exists in the ideal cases and should be the point toward which to strive in the arrangement of dentures. It not alone gives a pleasing esthetic result but eliminates the hideous bulk and unsightly appearance of planes that are too flat.

Fig. 2—Same principles as in Fig. 1, but more of an anterior study, showing again the highlight of the mouth to be at the median line. The line marked "A" drawn through the pupils of the eyes is parallel to the line marked "C" or the occlusal plane of the teeth. The line "B" across the upper lip which we can see looking at the patient from a front view is also parallel to lines "A" and "C." This gives from a front view a well balanced harmonious arrangement and we note again how the teeth lose their prominence and tend to be shadowed and shortened as they are arranged distally in the arch. The median line was meant to be the high and most attractive point of the mouth.

#### ADDITIONAL FACTORS IN DENTURE ESTHETICS

Along with tooth esthetics must be mentioned, of course, gold restorations, synthetic stainings, and other artifices used to produce naturalness in dentures, but I believe them only secondary to proper tooth selection in regard to form and color.

The operator should make it a point to stagger the shades, particularly the upper cuspids. If in the selection of these staggered shades we are familiar with the colors which are correct for that patient we will be able to select such varied cuspids

and laterals and centrals as to give the case a more natural appearance. This may seem of small importance but when actually put into practice an improved arrangement is the result.

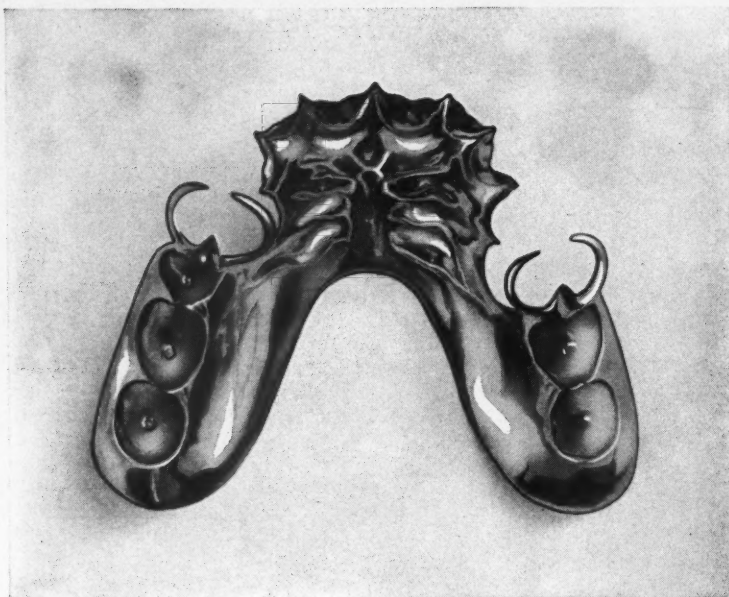
From an anterior view the median line to the cuspid with the lip raised as in a full natural smile or laugh, the centrals appear longest and lightest as they are meant to be the highlight of the mouth. The laterals are a more uniform shade, a little shorter, bearing the same outline form as the centrals and their purpose is to empha-

size the size of the centrals because of their own smallness. The cuspid is the darkest of the upper anterior teeth and it is here that we find most pigment owing to the thickness of the dentine and thinness of the enamel. This tooth if staggered with the proper shades for the case is important in color arrangement of the anterior teeth. It is, of course, impossible to arrange the teeth ideally in every case but through careful study and the proper grinding of the teeth, much can be accomplished even in adverse conditions.

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## ABOUT OUR CONTRIBUTORS

IRVING E. LABY, D.D.S. was graduated from the Chicago College of Dental Surgery in 1919 and taught there until 1920. Doctor Laby has previously contributed to the dental literature and is the author of a radio script, "Young Hickory" for a dramatic dental program. He is a member of the American Dental Association and has a general practice.

DOUGLAS H. IRWIN, D.D.S. (Kansas City-Western Dental College, 1923) reported a case of EPULIS OR GIANT CELL FIBROMA in the October, 1935 issue of this magazine.

C. L. MEISTROFF, D.D.S. makes his fourth contribution to the DENTAL DIGEST in this issue. His last article appeared in April, 1935: THE IMPRACTICABILITY OF ORAL AND DENTAL STEREOSCOPY.

DAVID HOYT SIMPSON received his D.D.S. in 1923 from the Atlanta-Southern Dental College. Doctor Simpson has previously contributed articles to the dental literature on the subject of porcelain restorations. Doctor Simpson is a member of the A.D.A., the Fifth District Dental Society, Georgia, Georgia State Dental Association, and the Southern Academy of Periodontia. He has a general practice.

FLOYD ERWIN STRAITH, D.D.S. (University of Michigan, 1923) specializes in oral surgery and radiodontia. In October, 1933, Doctor Straith as co-author published an article on FACIAL BONE INJURIES in this magazine.

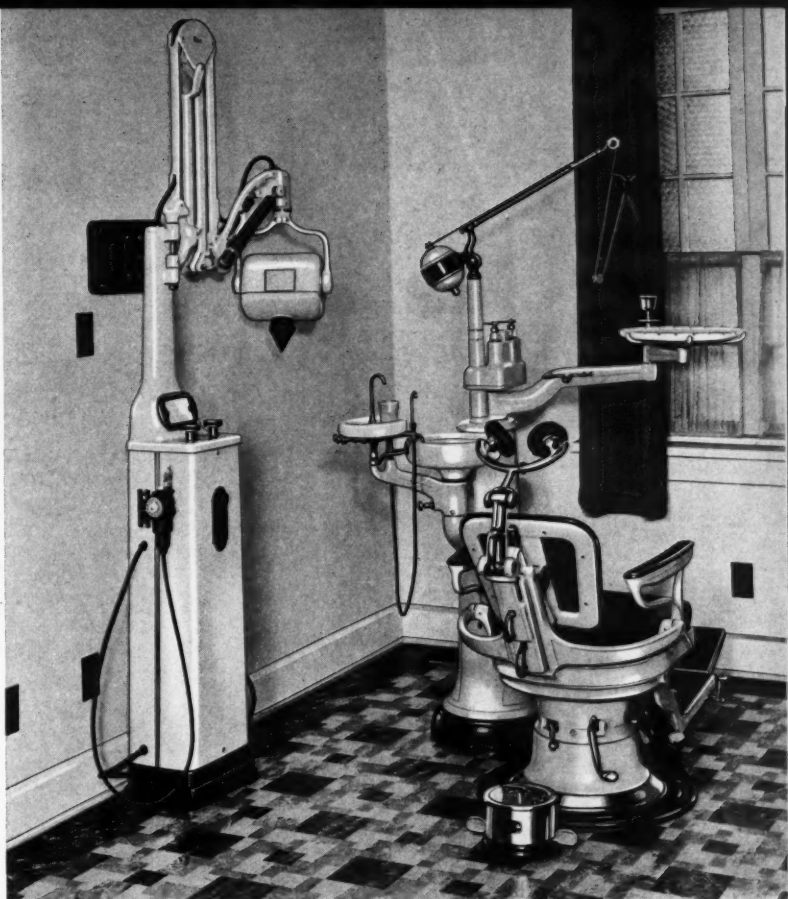
M. HILLEL FELDMAN, D.D.S. is a familiar name to readers of THE DIGEST. Doctor Feldman's last contribution was in the October, 1935 issue: THE MANAGEMENT OF THE MANDIBULAR THIRD MOLAR.

F. J. HOELSCHER, D.M.D. was graduated from the North Pacific Dental College, Portland, Oregon. Doctor Hoelscher is a member of the A. D. A., the Washington State and Seattle District Dental Societies, and the W. I. Ferrier Study Club, and practices general dentistry.



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## **TO THE EDITOR**

### **Correction of Carmichael Formula**

In my article entitled, A DUAL TECHNIQUE IN PULP THERAPY, which appeared in the March, 1936 issue of the DIGEST, there was an inadvertent omission in the Vapocide formula. This was an oversight on the part of my chemist and went unobserved until the article was in print.

The vaporizing base consists of Ethyl alcohol 25 per cent and distilled water 75 per cent. The complete formula should therefore read:

Vapocide:		
Eucalyptol .....	0.616	cc.
Thymol .....	0.648	Gm.
Oleum pinus pumilionis .....	1.5	cc.
Methyl salicylate .....	0.616	cc.
Glycerin .....	15.0	cc.
Formaldehyde (40%) .....	120.0	cc.
Vaporizing base (containing		
25% Ethyl alcohol and 75%		
distilled water) q.s. ad. ....	480.0	cc.

—J. P. CARMICHAEL, D.S.S., Los Angeles.

### **PROTECTION OF INTER- PROXIMAL GINGIVAL TISSUES**

I would like to suggest a way to protect the interproximal gingival tissues from mutilation during the preparation of mesial and distal surfaces of teeth for inlays, veneers, and crowns when a knife-edged carborundum disc or a lightning disc is used.

An Elliott separator is inserted in the interproximal space and pressed gently against the interproximal tissues. It is often necessary to obtain separation between the teeth to allow for the insertion of the grinding disc. In such a case the separator serves a double purpose. It creates room for the insertion of the disc and protects the gingival tissue from injury during the preparation of the proximal surface of the tooth.

—JOHN H. NESSON, D.M.D., Boston.

### **TEXAS STATE DENTAL SOCIETY CONVENTION**

The Fifty-Sixth Annual Convention of the Texas State Dental Society will be held in Dallas from August thirty-first to September fourth. The meeting has been planned to coincide with the Texas Centennial Exposition.

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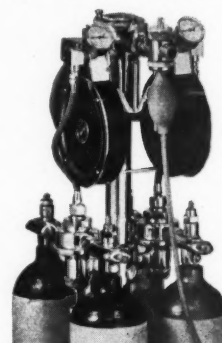
Additional information may be obtained from J. G. Fife, Secretary, Texas State Dental Society, Medical Arts Building, Dallas, Texas.



### **Appointment Books tell**

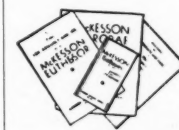
#### **how patients talk**

How many dental patients are gained or lost at the lunch table, during a bridge game, or on the many and varied occasions when friends meet? How often do we hear the remark, "I am badly in need of some dental work, but I dread the very thought of going to a dentist"? How frequently during these conversations do we hear, "Go to my dentist. You need have no fear of being hurt"?



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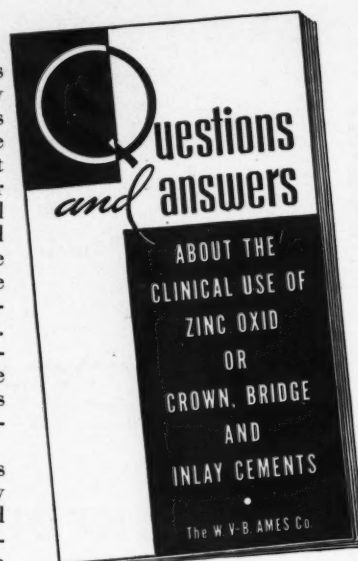
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Renewable

Skill in impression taking and careful arrangement of teeth can all be wasted if the flask in which the case is placed is not accurately fitted. Buffalo Dental flasks have long been noted for the accurate fitting of their parts, and the new No. 28 Resin flask is no exception.

Newly designed tools for holding the parts in position while milling the slots for the guides, and entirely new pattern equipment are responsible for the fine fit of the No. 28.

Use this NEW flask for ALDENOL and LUXENE and for upper dentures in rubber.

The price in Buffalo Dental Bronze is \$4.25.

Inside dimensions

$2\frac{1}{8}$  x  $3\frac{3}{4}$  x  $1\frac{3}{4}$

(Ask for our flask booklet. See coupon on page 214)

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Buffalo, N. Y., U.S.A.

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It enables you to  
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**THE  
DENTAL DIGEST**

## AFTER THE A.D.A. CONVENTION

By SANFORD M. MOOSE, D.D.S.

"Dear Harry:

"In my previous letters I told you about many of the things to see and do here in San Francisco. Now, after the Convention you will certainly want to explore the beauty spots roundabout San Francisco. The Seventy-Eighth Convention closes on Friday, July 17—which will give you the opportunity of driving a hundred miles or more south of the city over the week-end for a truly novel experience.

"Have you ever witnessed a Rodeo, where real riders and ropers go through their paces of bull-dogging and broncho-busting? Well, the West's finest Rodeo is held at Salinas each year, and on Sunday, July 19, you'll be just in time to see the liveliest show you've ever attended. And will Elsie and the two boys love the excitement!

"Salinas is only a few miles from Monterey and Del Monte, over on the coast. Spend a day or two there. Hotel Del Monte is the world's largest resort—20,000 acres of forests, golf courses, flowers, bridle paths, and sports domain. It's a great place to rest and relax. But if you prefer to be active, there are scores of things to do—from ocean fishing to scenic drives along the Pacific.

"Monterey will certainly appeal to you and Elsie. With its quaint adobe buildings, more than a century old, it has the charm of Spanish California. You'll see the old Custom House; Colton Hall, where the first state Constitutional Convention was held; Robert Louis Stevenson's house, where he lived during his stay in Monterey; the old Whaling Station; California's first theatre, and many other historic shrines.

"Take the Seventeen-Mile Drive from Monterey, if you want vistas of cypress trees, green hills, and blue Pacific. The highway curves along the shoreline and leads you to little Carmel-by-the-Sea, where the homes of artists and writers are picturesquely set amid gardens and shade trees.

"Old Carmel Mission is over the brow of a nearby hill. As you stand and look out over the peaceful valley, toward the distant purple hills, you feel much like Father Junipero Serra did many years ago when he sought a location for his Mission at Carmel. And then suddenly you see Carmel Mission, to your right, silhouetted against the sky and ocean. Like all the other Missions in the California chain of twenty-one, this structure was built in a choice location.

"Returning to San Francisco—it's only a four-hour drive—you might find time for a tour of the Redwood Empire, stretching north of the city. If you wish, you may return home via a northern route, taking in part of the Canadian Rockies en route.

"Mile after mile you drive through redwood forests—trees thousands of years old and many of them towering more than 300 feet in the sky. Although it will be July, and a warm California sun will be shining, its rays will often fail to penetrate the great mass of branches and foliage overhead. Occasionally a slanting shaft of radiance will pierce the treetops and cast a light on the road before you. As the trees rise

THE HOUSE OF SQUIBB is placing the full force of newspaper, magazine and radio advertising back of the single thought that "Most Tooth Decay Can Be Prevented."

In all of this advertising, we are frankly advising the public that the desired results can be accomplished *only* by combining adequate professional service with daily home care.

#### This is the Plan We Advocate

1. Go to your dentist and follow his advice. This will include the kind of toothbrush to use, and how to use it; what kind of dentifrice to use, and what kind not to use; and whether you should supplement your own home treatment with the use of dental floss and oral perborate.
2. Check your diet with your physician or dentist—to be sure your system is getting the elements essential to the health and strength of your teeth.
3. Brush your teeth thoroughly, at least twice a day, and be sure you use a dentifrice scientifically prepared to clean teeth effectively, and safely.

*The House of Squibb has spent many years in the development of dentifrices that conform to the highest standards of the dental profession*



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3206 Squibb Building, New York City

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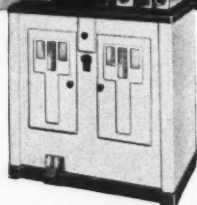
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(See caution on page 215)

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THE DENTAL DIGEST, 1005 Liberty Ave., Pittsburgh, Pa.

in great columns of utter straightness you seem strangely alone—a rose-colored glow lingers in the forest solitudes, as the dark, rich bark becomes almost purple. But there, I'm getting poetical!

"Anyway, you'll never find the equal to the vast redwood forests of northern California, no matter where you go in this world of ours.

"And side-trips—there are a number of them along the way. The geysers of Sonoma County, for instance. They are just a few miles off the main highway north and south. There you'll see spouting jets of steam that have been hissing since time immemorial. And fumaroles, hot mud springs, and steam-caves! The curative waters of the Geysers region, it is said, are similar to those at Warm Springs, Georgia.

"Not far away is the Petrified Forest, also in Sonoma County. Ages ago, volcanic ash from nearby mountains covered the earth for miles around. The hot molten lava leveled giant redwood, oak, and madrone trees as it swept down the mountain side, embedding them for centuries. When they were discovered, within the last century, it was found that the buried trees were turned to stone, perfectly preserved. The prone giants are on exhibit, just as they were found.

"Jack London's 'Valley of the Moon' is not far away. It was in this idyllic setting of foothills and rolling, green valleys that the famous author worked.

"And in Santa Rosa you'll see the experimental gardens where Luther Burbank produced so many marvelous growths. His estate carries on his work, and the grounds may be viewed.

"Of course, you know that California leads the country in grape and wine production. In Sonoma County you will pass through the land of vineyards, many of them located on warm, sunny hillsides. You will be too early to witness the colorful harvesting scene when the great bunches of grapes are taken from the vines, but the neat rows of terraced bushes still present a striking picture.

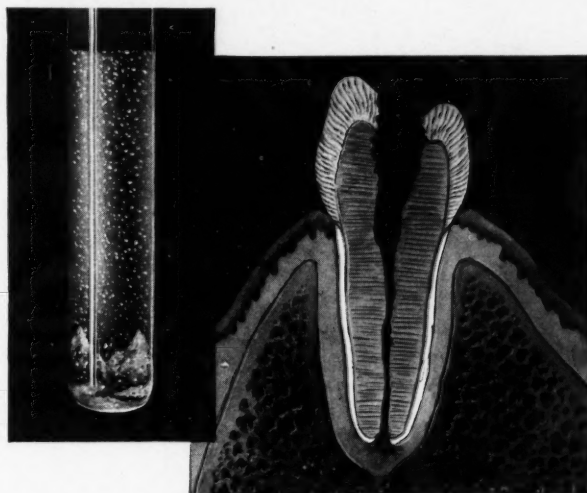
"Listen, Harry, don't forget that fishing rod! The Eel, the Klamath, the Smith, and other rivers up in the Redwood country are literally *alive* with trout! In many instances, you can put up at some comfortable inn along the way, walk about 500 feet, or less, and you are at the river's edge. Then all you have to do is cast; the fish'll do the rest!

"The farther you penetrate into the Redwood Empire, the more rugged the scenery becomes—but always you are on excellent paved highway. You'll pass fisheries along the Pacific, where salmon is canned; you'll see great lumber camps, and wonder about all those redwoods you just passed. But don't worry—they don't cut *those* trees down! They are preserved for posterity, most of the important groves being included in the state system of parks and forests. But if you are interested in knowing what happens when a tree is cut down, out of the public domain, you might visit one of the reforestation stations along the way. For every tree cut, twenty or more are planted. In this way, California assures herself of redwood lumber for the coming years.

"You may continue northward after traversing the Redwood Empire, and reach Portland or Seattle, returning east by the northern highway I suggested. Or, you might see more of California by returning to San Francisco, via the interior route, Highway Number 99, known



*Culture  
from the  
apices of  
pulpless  
teeth.*



## *When Pulpless Teeth Threaten Systemic Infection...*

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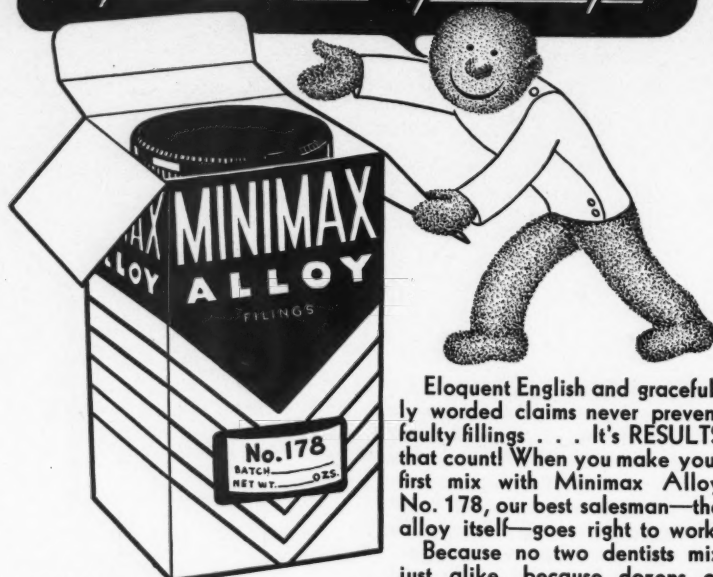
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**Use "KELLY'S PASTE"**

as the Golden State Highway. This takes you past majestic Mount Shasta, in the upper Sacramento Valley, and through the fertile valley itself, where farming and fruit-raising are predominant.

"But, remember this, whatever you do after leaving the Convention and San Francisco, you can't go wrong. There are too many good highways leading in all directions, and leading to some of the finest beauty spots you've ever seen.

"Well, Harry, my best wishes to all of you, and so long until next month!

"As ever yours,

"Sanford"

### The New Improved DENTO-PROFILE SCALE



THE DENTO-PROFILE SCALE was devised to obtain accurate *unvariable measurements* of all facial dimensions concerned in denture restorations.

With the Scale and Indexed Record Charts it requires less than five minutes to make a complete graph, showing: Profile; location of the teeth in two dimensions; and the position of the mandible in the correct closed centric bite.

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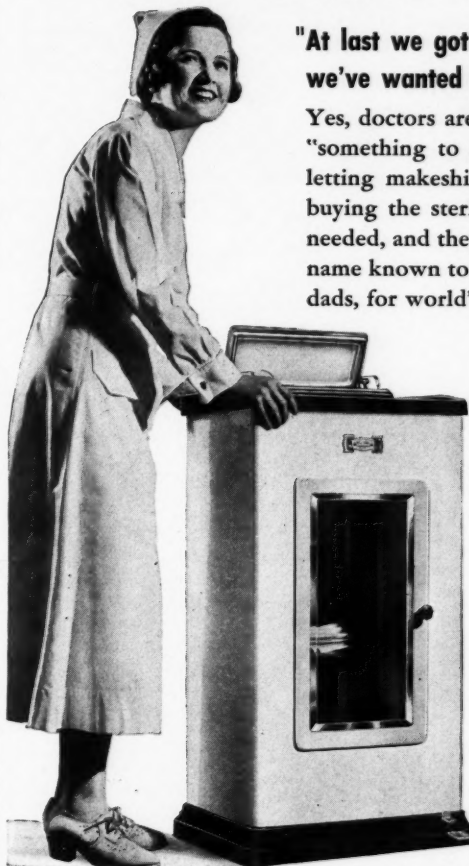
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*Write for book*  
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Lee Smith Certified Medi-Cement is primarily a medicated temporary filling material—a sedative cement—with a host of auxiliary uses.

Medi-Cement is both hydraulic and impervious. It is superior to temporary stopping because it may be applied without heat or pressure; superior to the usual temporary cement because it is extremely adhesive and is in itself a sedative.

A brief folder has been prepared describing the indications for and the method of use of Medi-Cement. Ask for it by sending the coupon on page 214.

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D.D.6

GENERAL ELEC. X-RAY CORP., DEPT. H46  
2012 JACKSON BLVD., CHICAGO, ILL.Send further facts, figures, and folder  
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as mentioned in ad. Here is my card or  
letterhead.

Dr. \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

See page 204-213

D.D.6

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Please send me the booklets on:

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☐ Medi-Cement

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Address \_\_\_\_\_

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See page 205

D.D.6

WEBER DENTAL MFG. CO.  
CANTON, OHIO.Please send me literature on Weber  
Equipment. I am particularly interested  
in: ☐ Chair ☐ Unit ☐ X-Ray  
☐ Cabinet

Dr. \_\_\_\_\_

Address \_\_\_\_\_

Dealer \_\_\_\_\_

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D.D.6

P. BLAKISTON'S SONS CO., INC.  
1012 WALNUT STREET, PHILADELPHIA, PA.Send Dunning & Davenport Dental  
Dictionary, \$6.50.

Dr. \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

See page 206

D.D.6

MCKESSON APPLIANCE CO.  
TOLEDO, OHIO.Please send me literature on McKesson  
Analgesia.

Dr. \_\_\_\_\_

Address \_\_\_\_\_

Dealer \_\_\_\_\_

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D.D.6

EMERSON DRUG COMPANY  
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Dr. \_\_\_\_\_

Address \_\_\_\_\_

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D.D.6

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FREMONT, OHIO.Send book "Questions and Answers"  
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Dr. \_\_\_\_\_

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*Mix Cal-C-Malt with milk. It makes a delicious nutri-  
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Dr. \_\_\_\_\_

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City \_\_\_\_\_

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D.D.6

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 for my inspection.

☐ Please send literature and informa-  
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 with dentures.

Dr. \_\_\_\_\_

Address \_\_\_\_\_

Dealer \_\_\_\_\_

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Dr. \_\_\_\_\_

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City \_\_\_\_\_

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D.D.6

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Dr. \_\_\_\_\_

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 COLUMBUS, OHIO.

Please send free booklet mentioned in  
 ad.

Dr. \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

See page 209

D.D.6

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 3206 SQUIBB BLDG., NEW YORK CITY.

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 card or letterhead. Please send me a  
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Dr. \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

See page 210

D.D.6

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Dr. \_\_\_\_\_

Address \_\_\_\_\_

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That's what so many successful Dentists keep telling us. And it must be true. Regardless of materials or technique, good inlay results demand reliable, controllable heat.

Guessing about heat doesn't pay. Beside, make-shift heating devices

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THE DENTAL DIGEST  
1005 Liberty Ave.  
Pittsburgh, Pa.

### THE PUBLISHER'S NOTEBOOK

IN this issue, this journal presents a new chart in the series for *The Education of the Dental Patient*. You will find it in the center of the magazine, pages 198 and 199.

This month's chart is an effort to provide the profession with visual material that may aid dentists in explaining to patients not only the usefulness, but also the limitations, of the Hartman desensitizer. The public press so widely publicized the solution as a panacea that dentists everywhere have been faced by the necessity for correcting this erroneous impression. Far too much was promised; the inevitable disappointment which ensued has jeopardized the future of the desensitizer—and numerous members of the profession agree that the solution *does* have merits which justify a place for it in the dental armamentarium.

From the first, this magazine and *Oral Hygiene* have tried to deal promptly and helpfully with the situation which developed when Columbia University announced the desensitizer last Thanksgiving Day and which became more complex when the formula was disclosed to the world January 21. January *Oral Hygiene*, in a detailed editorial, bluntly criticized Columbia's premature publicity; February DENTAL DIGEST carried Doctor Hartman's own explanation and technique, its first appearance in a national dental publication; in March, *Oral Hygiene* reported Doctor Hartman's address at the Chicago Dental Society meeting; and in April published Doctor Joseph H. Steele's intimate description of a case as well as interviews with several dentists secured by Doctor Rex N. Douglas.

The two-page chart carried in this number of THE DIGEST is part of our magazines' plan for presenting the real truth about the Hartman desensitizer in the hope that readers may be helped in interpreting to patients its usefulness and its limitations.

MERWIN B. MASSOL, *Publisher*.





*For*  
**PARTICULAR  
PATIENTS**

# TRUPONTICS

If you want the best available tooth for fixed bridge work, there's only one answer: "Trupontics".

As a matter of fact, many dentists find it advisable to employ Trupontics wherever fixed bridge work is indicated. Finer work pleases patients, and pleased patients are practice-builders.

The next time you want to satisfy your patient, use Trupontics.

Adaptation of Trupontics to tissue is important. A new free booklet is available covering this subject. Send for it!



*Steel's*

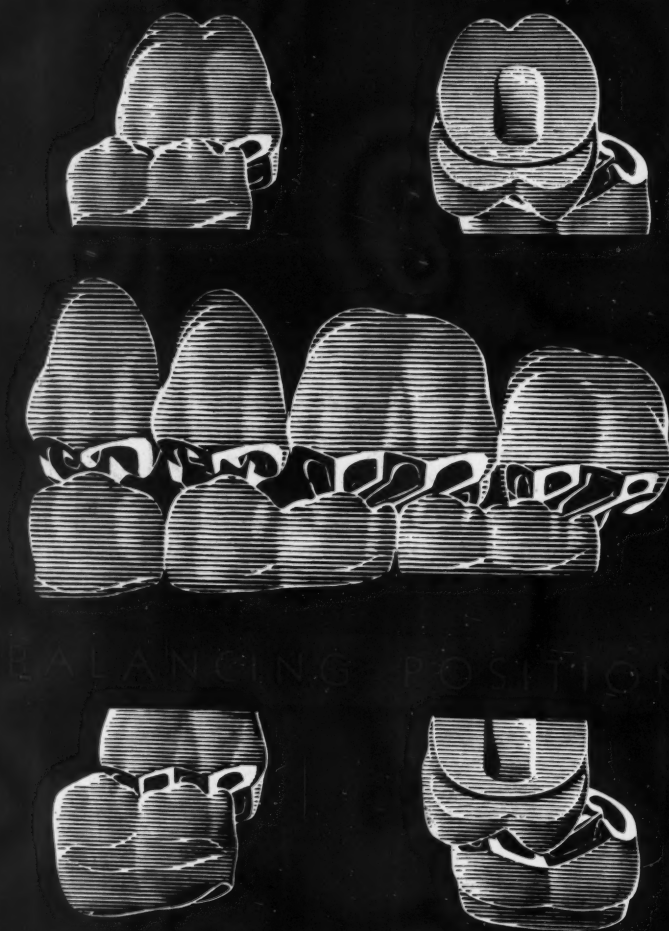
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TEETH AND TREES  
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**JULY, 1936**  
Vol. 42 No. 7





## Get A Good "Close-Up" Of The CDX

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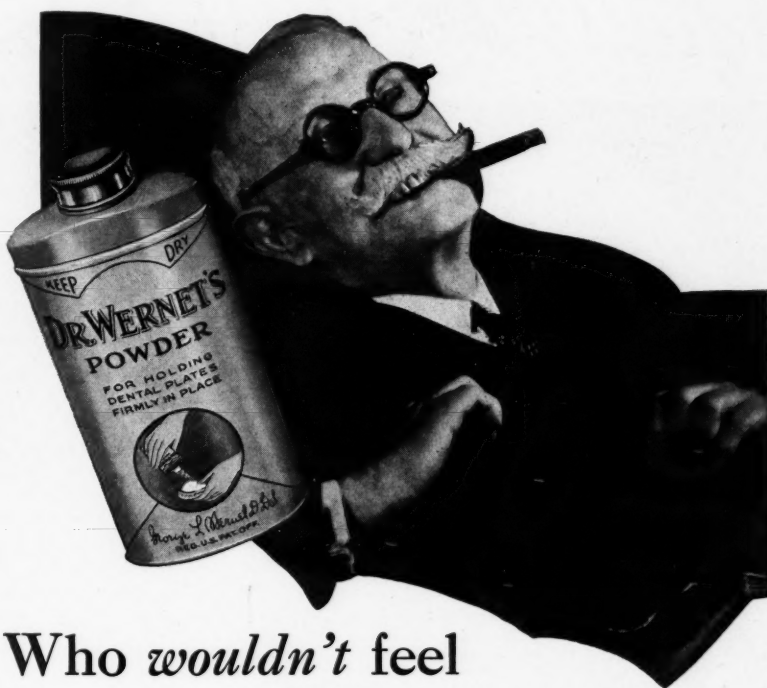
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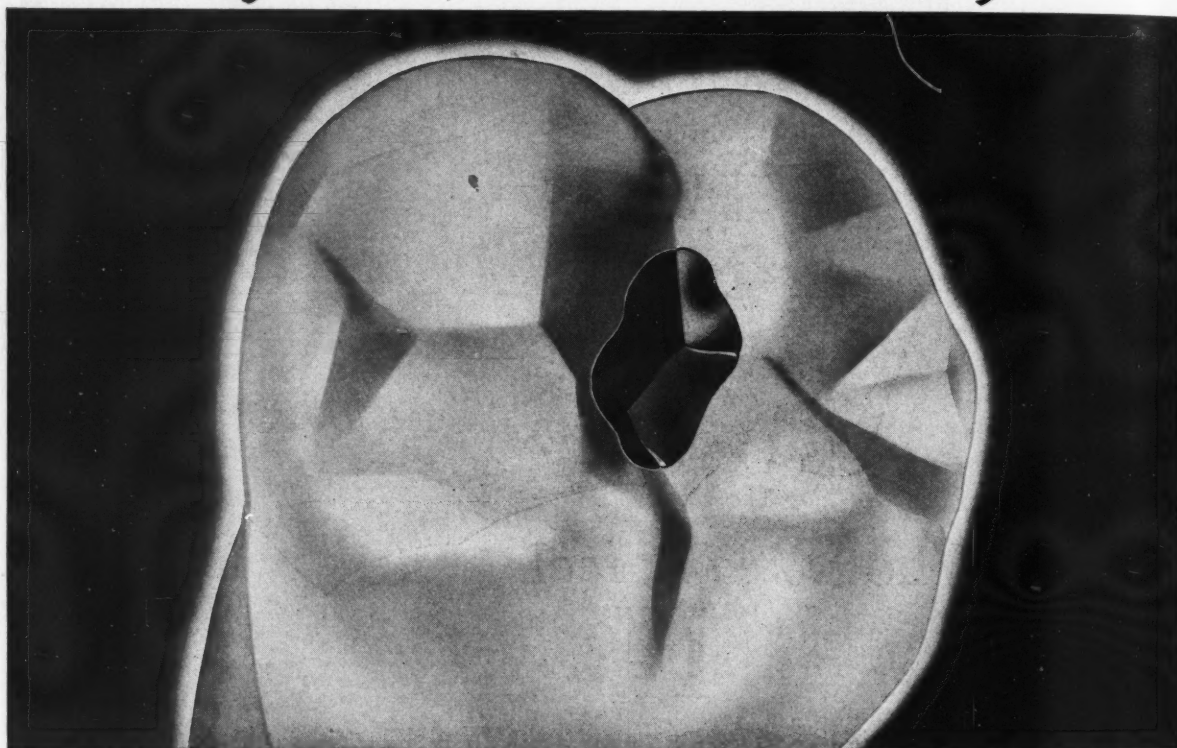
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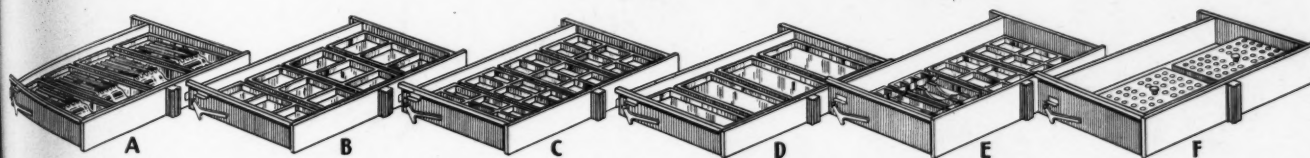


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